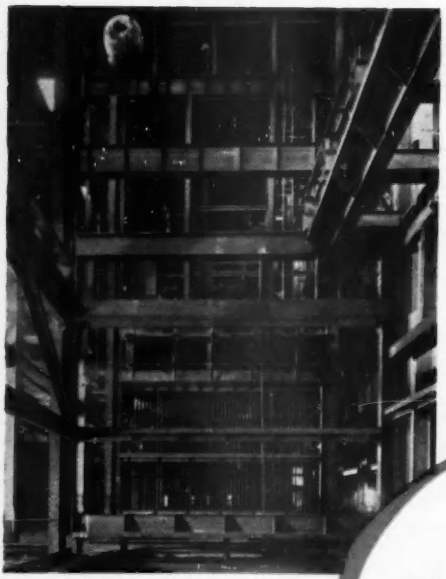
ELECTRICAL TIMES

THURSDAY
4 JUNE
1953
NINEPENCE

USKMOUTH POWER STATION



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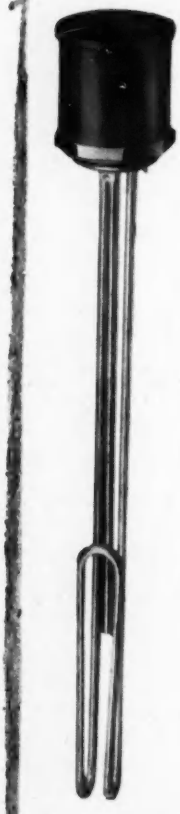

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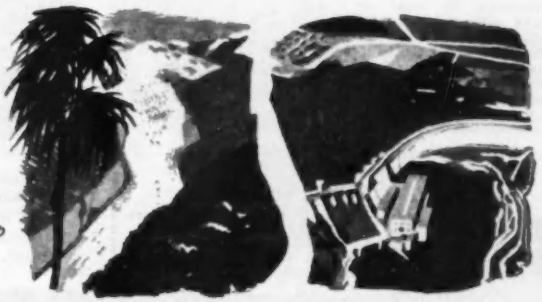

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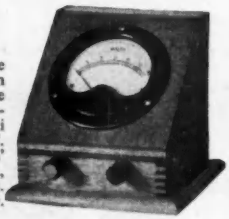

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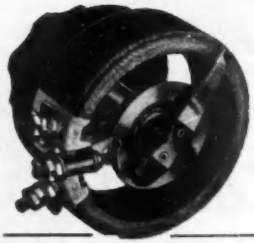

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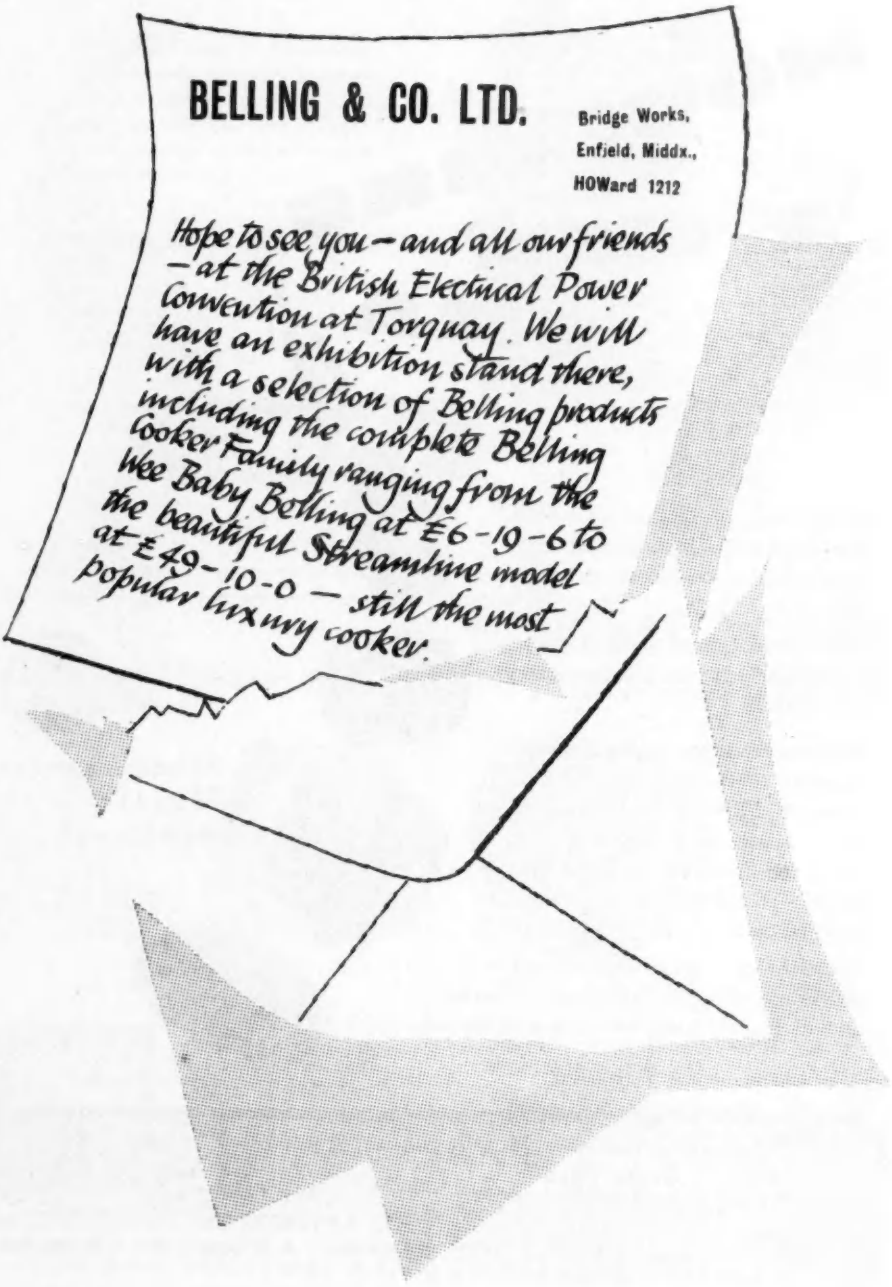
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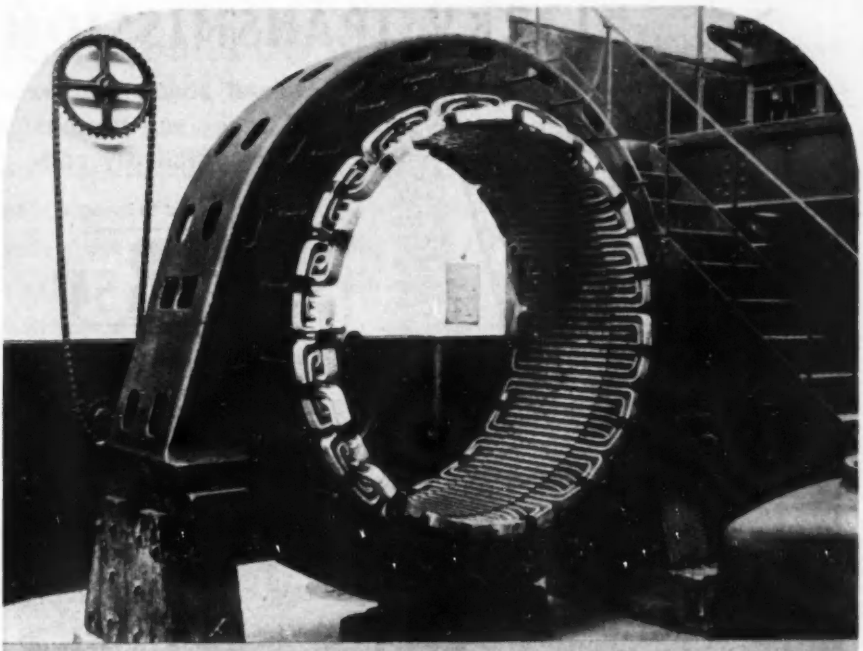

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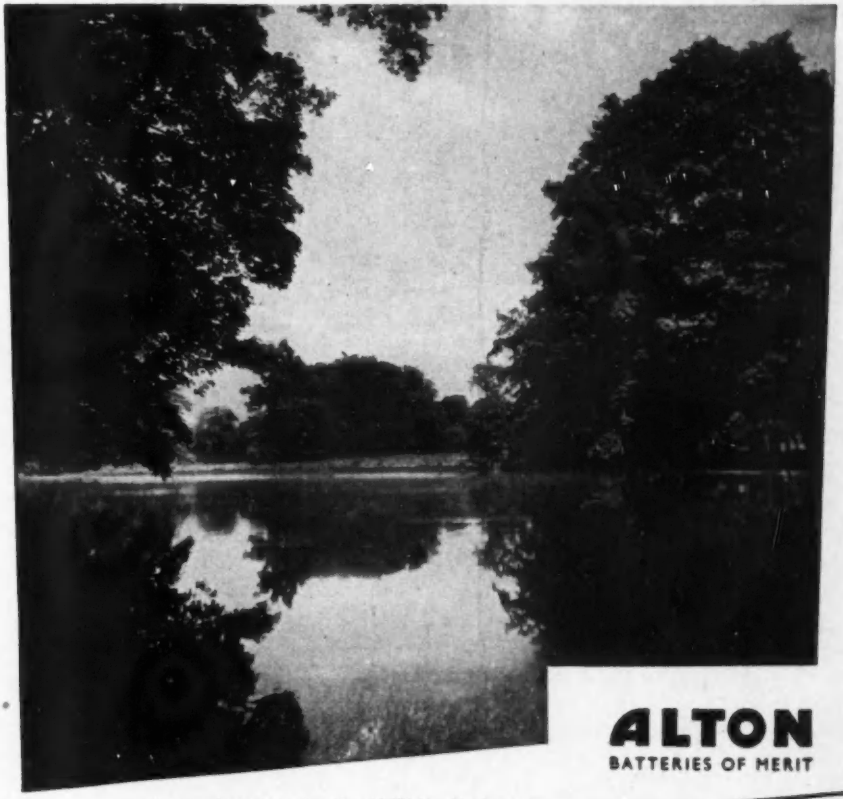

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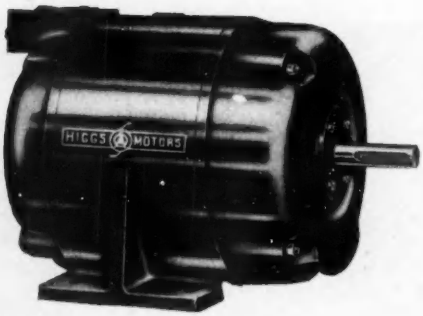

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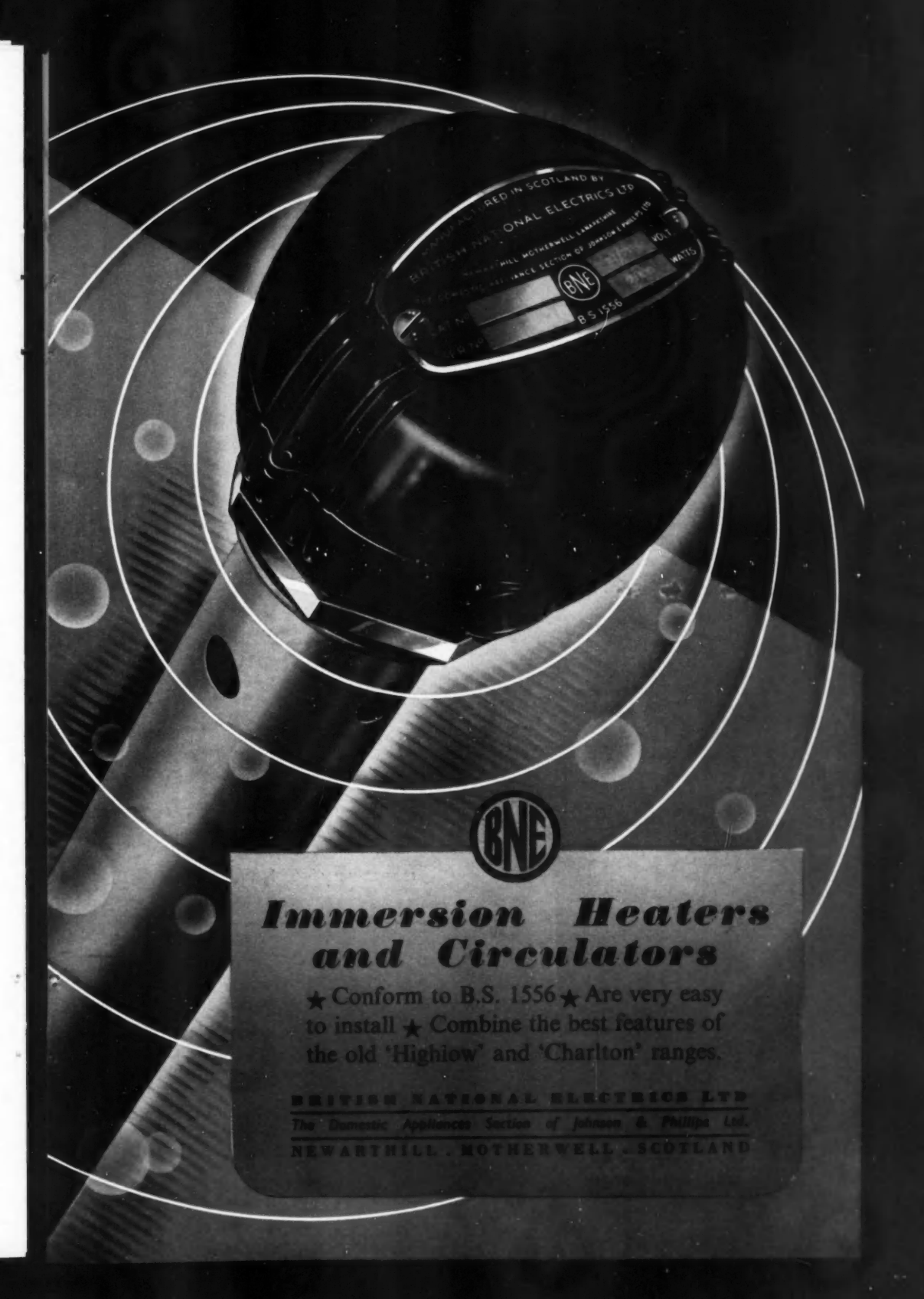
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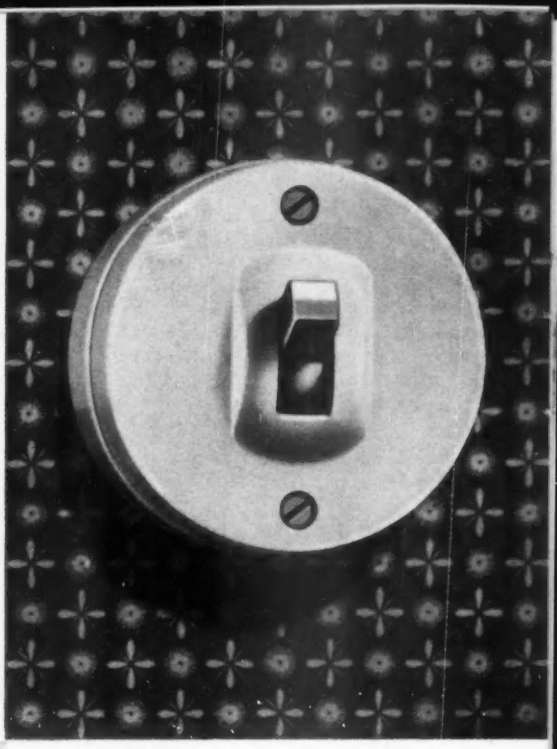

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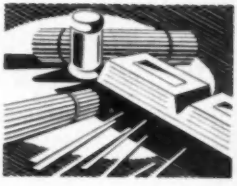

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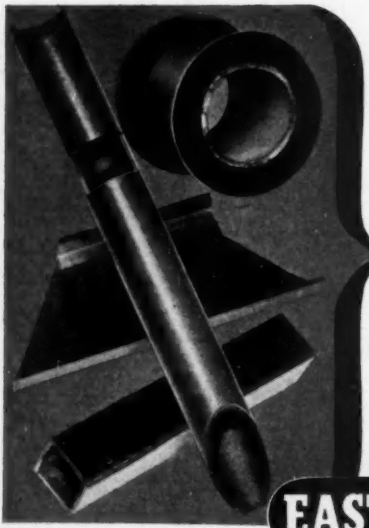

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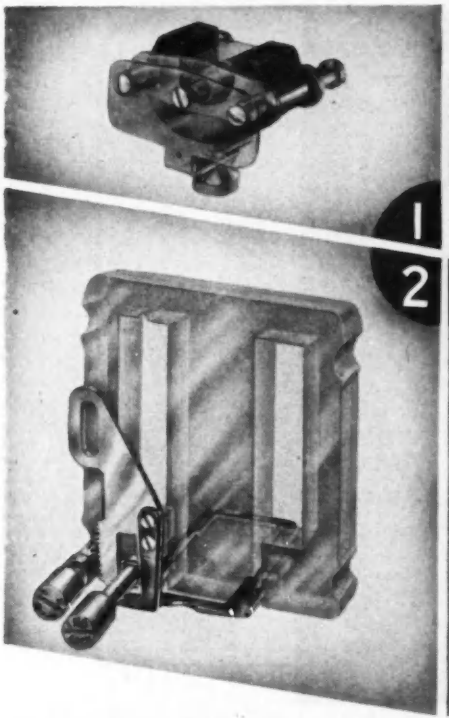

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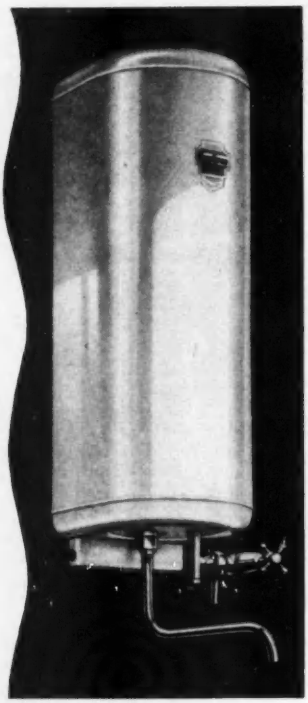

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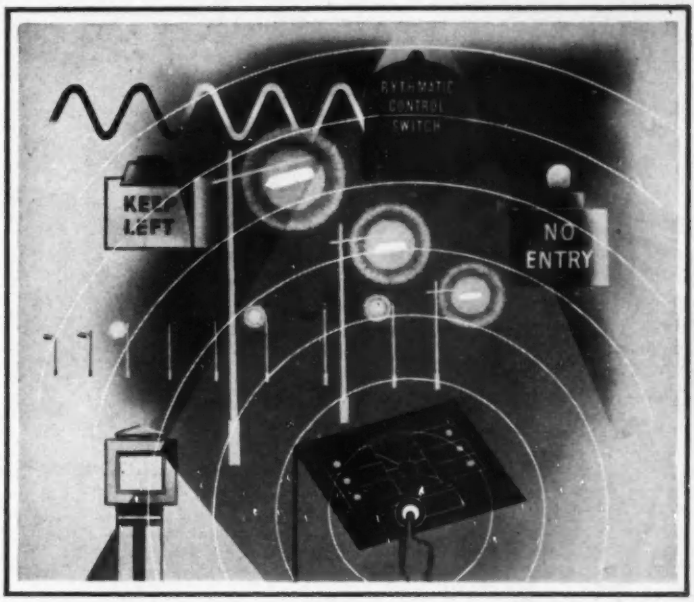

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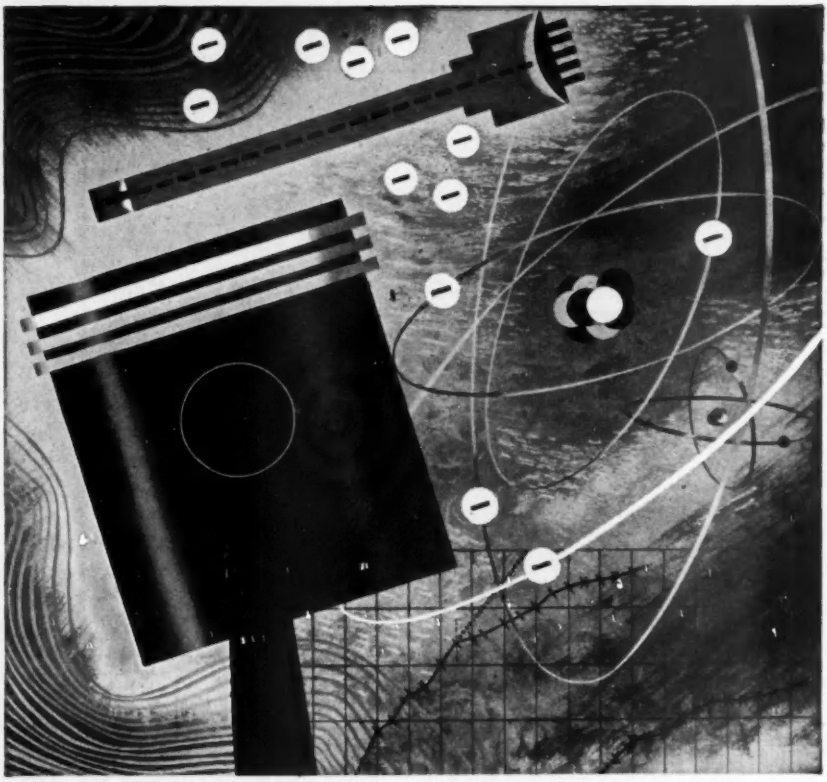

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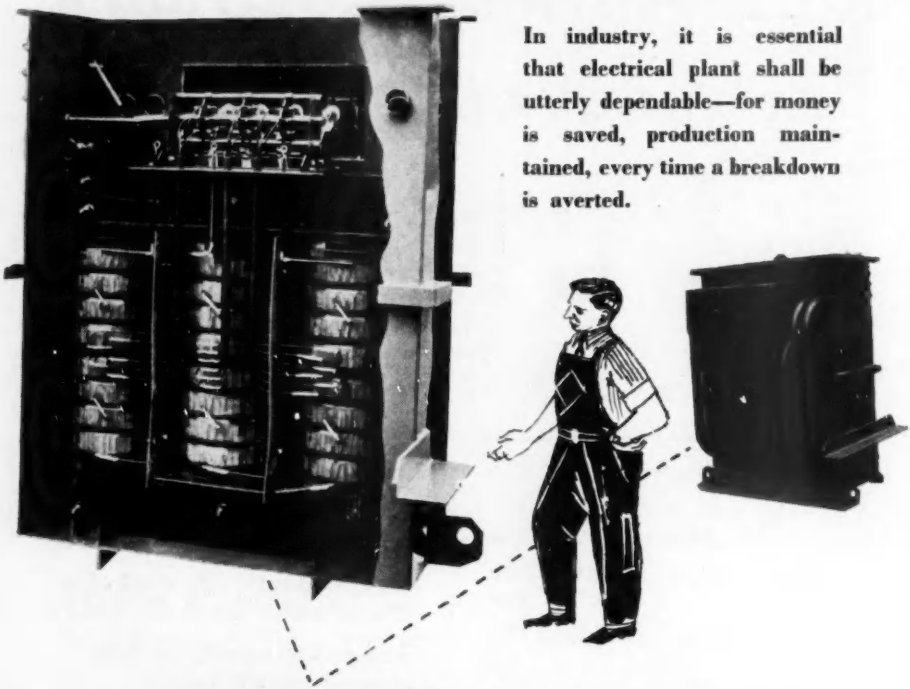

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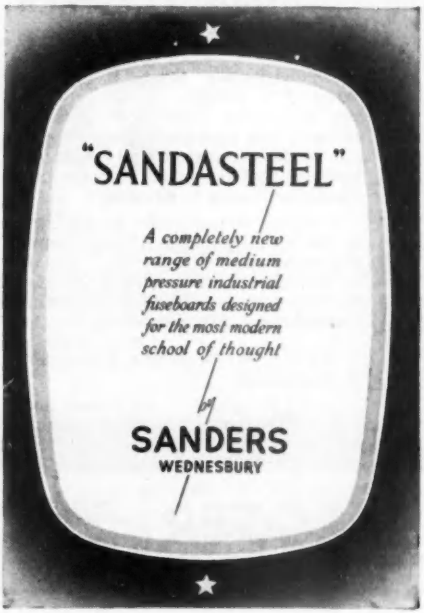
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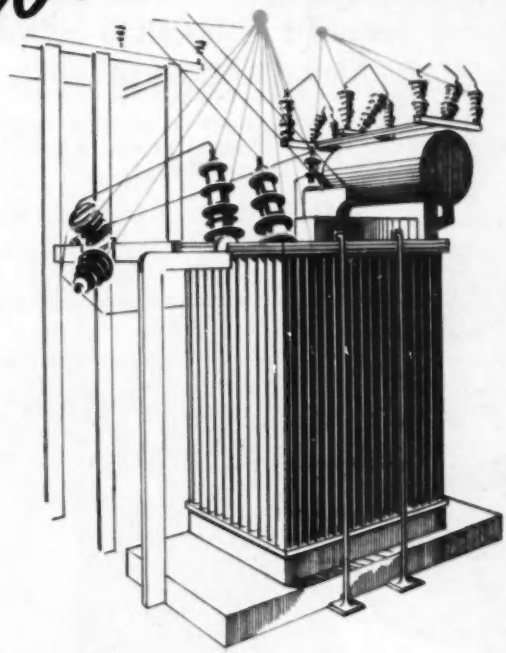

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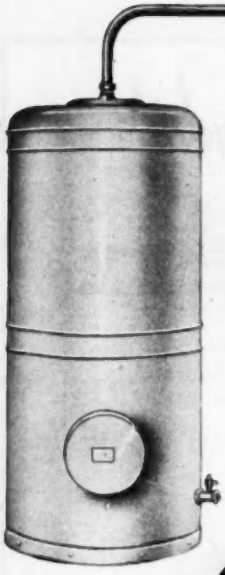

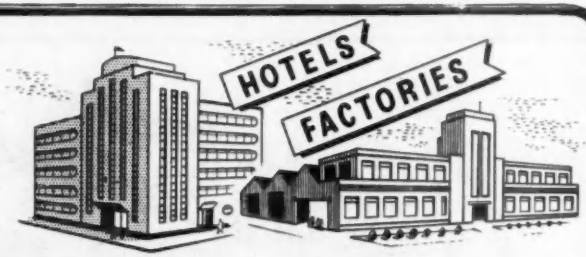

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Heavy gauge copper construction, lagging protected by large steel casing or suitable for lagging on site. Kilowatt loading to meet requirements

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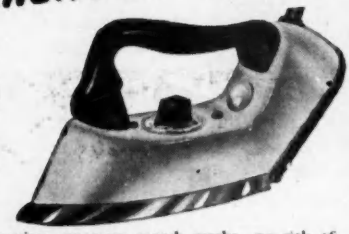

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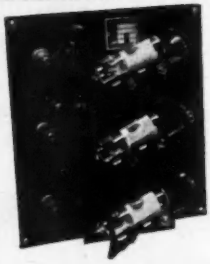

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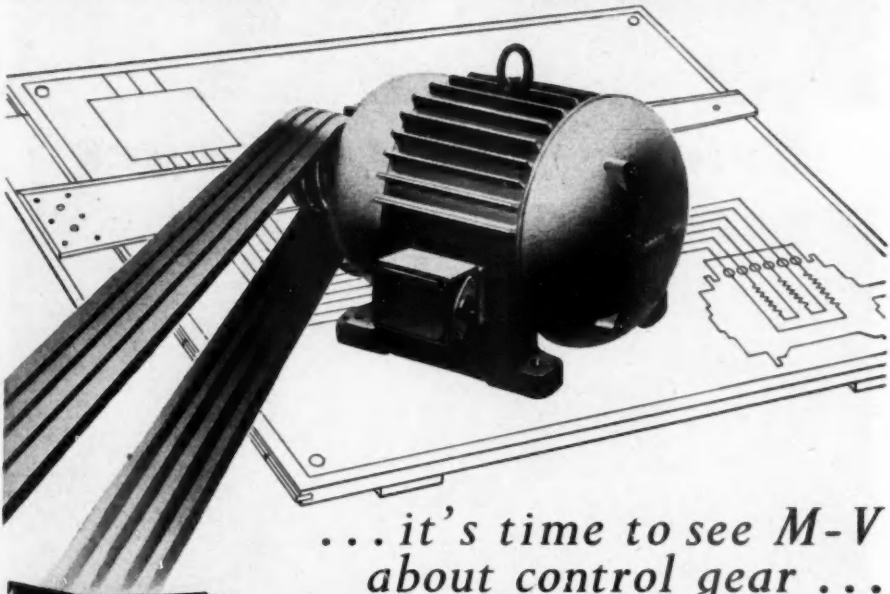

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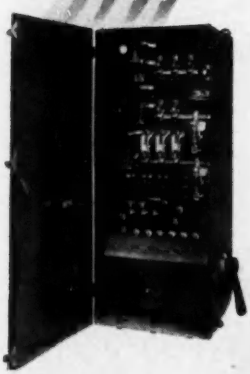
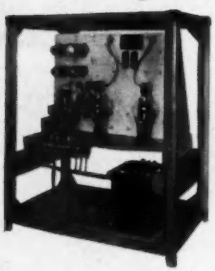
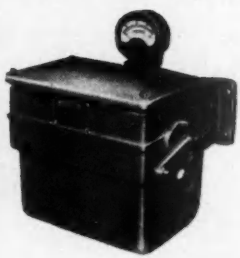


M-V Stator-rotor Contactor Starter



M-V Electronic Speed-control Equipment



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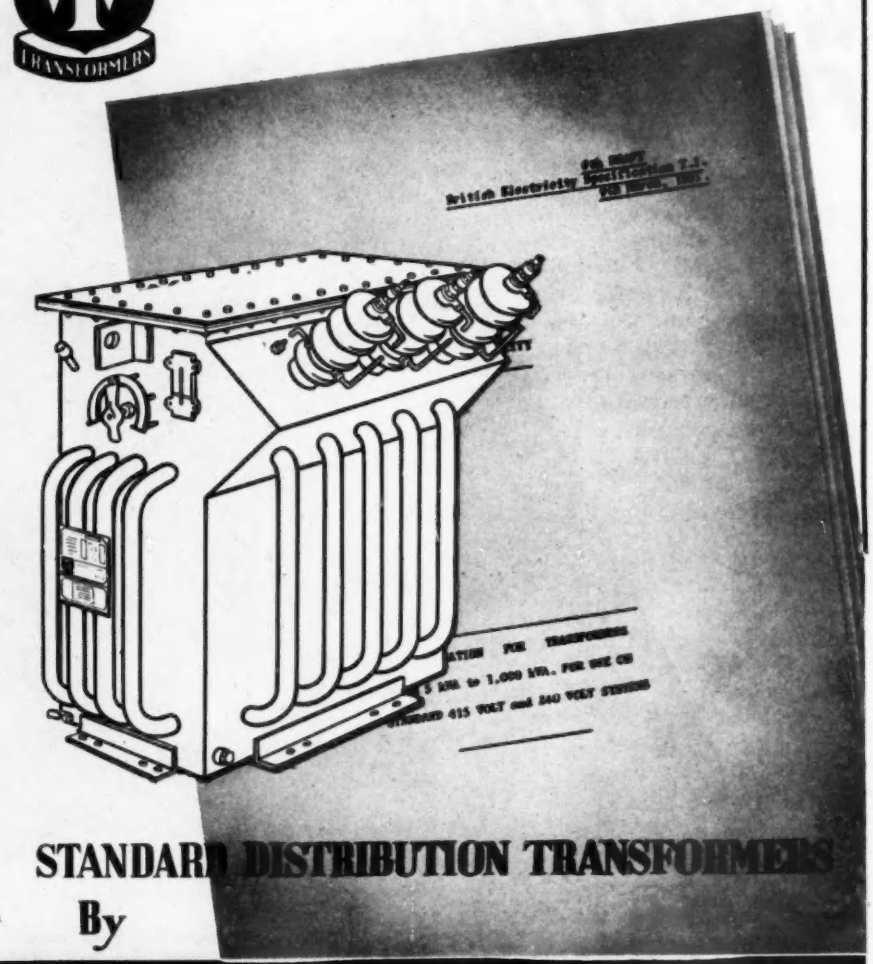

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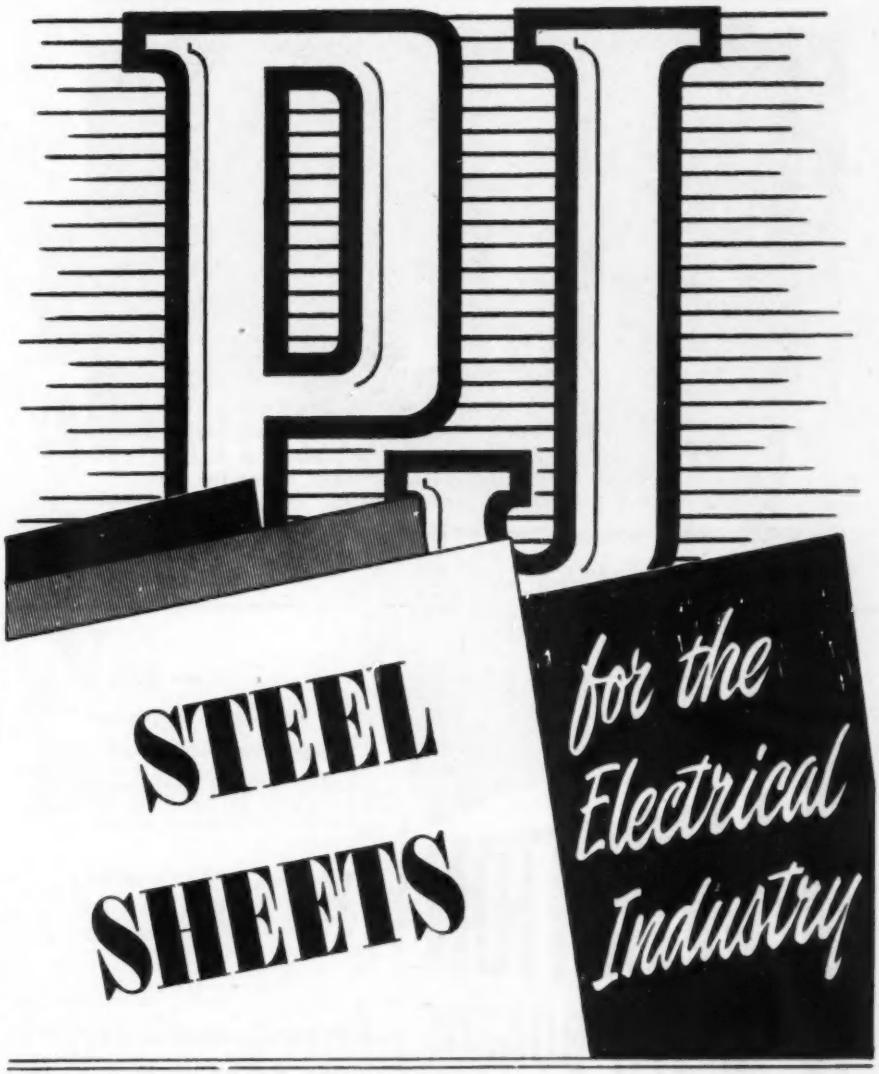

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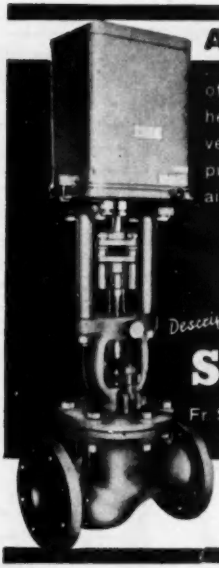

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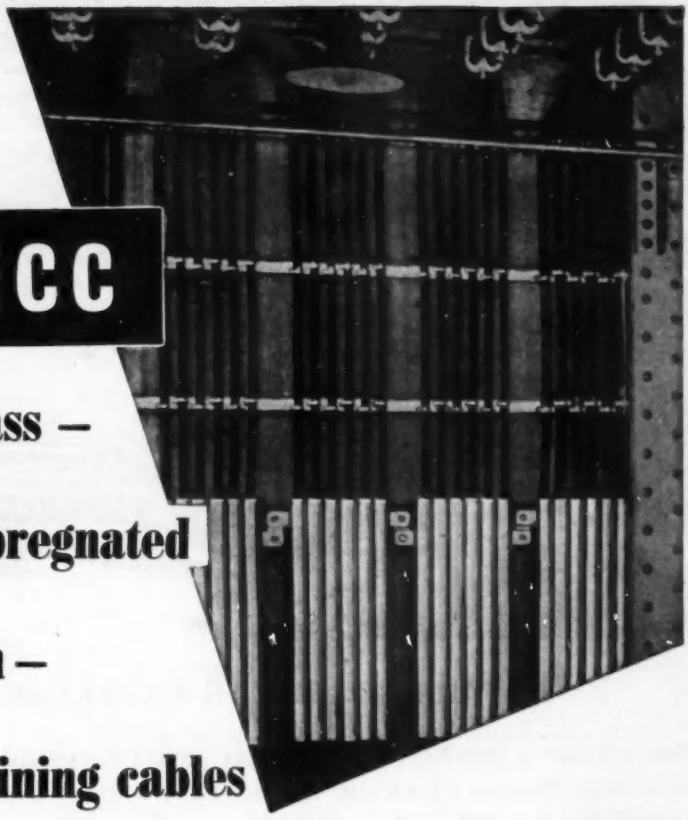

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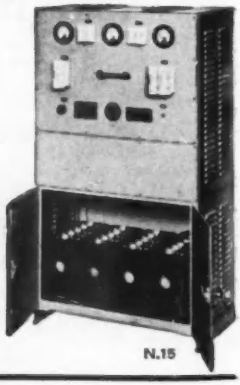

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with the STEEL battery

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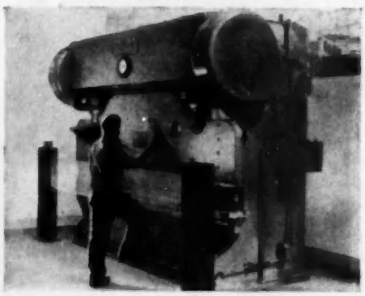

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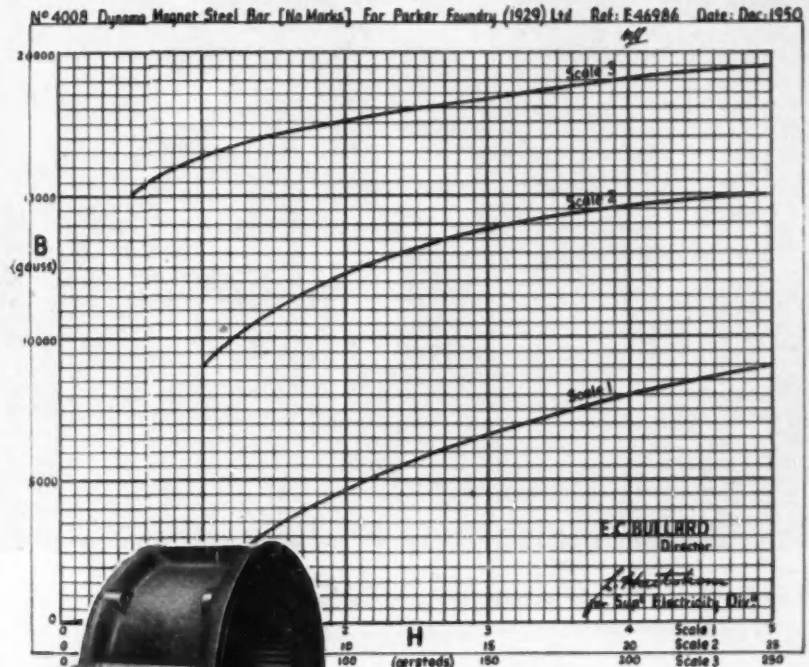

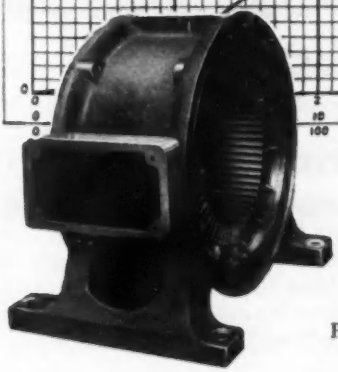

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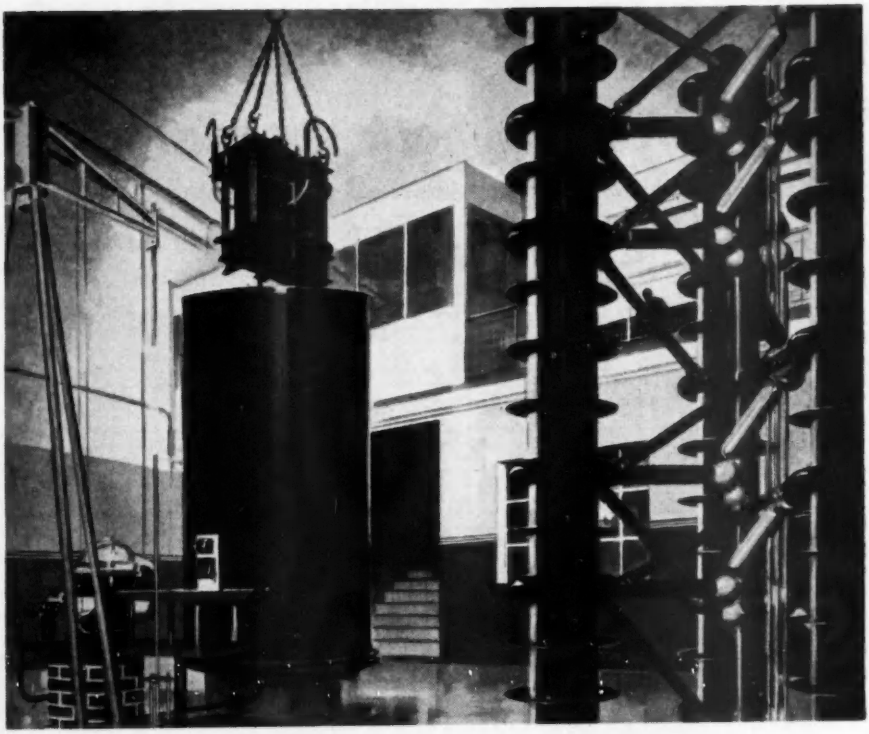

Apparatus being lowered into insulating tank.

Trial scene . . .

This is the scene of many transformer tests and trials—a section of the modern High-Voltage Laboratory, incorporated in the reconstruction and re-equipment of the B.E.T. works at Hayes. Here new knowledge is constantly being added to the experience gained by the B.E.T. in its 50 years of transformer specialisation.

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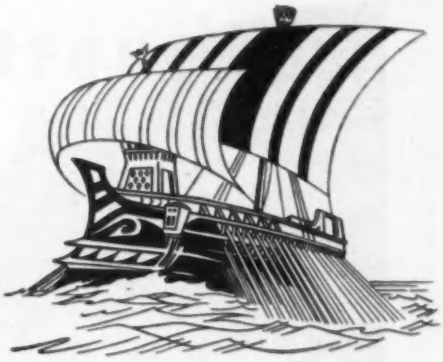
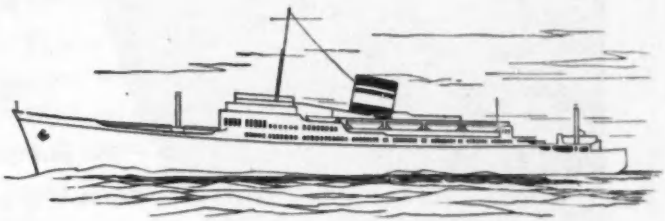


WITH AGE AND RACE—



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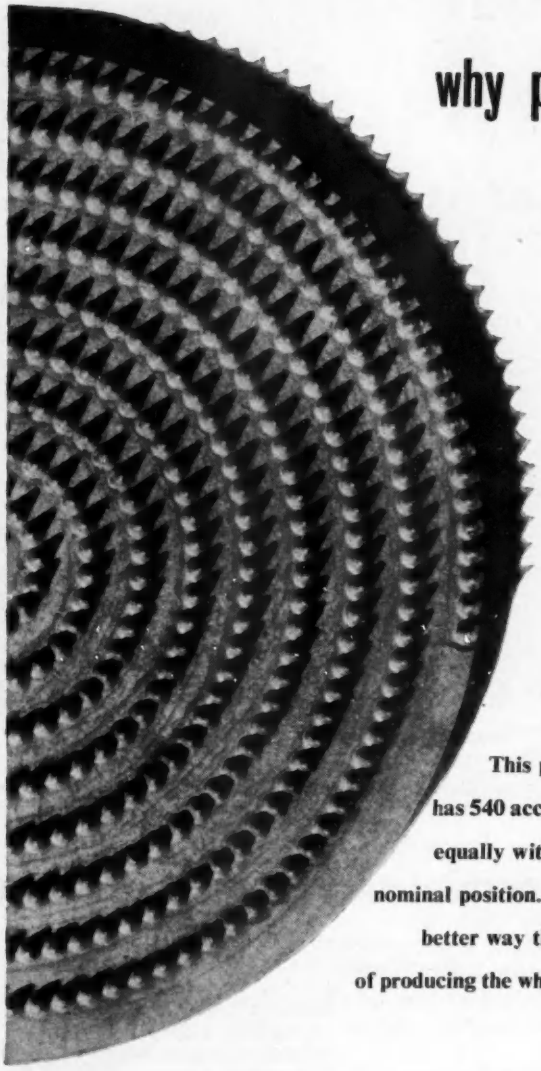

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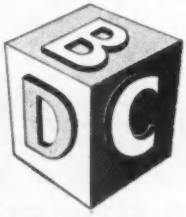

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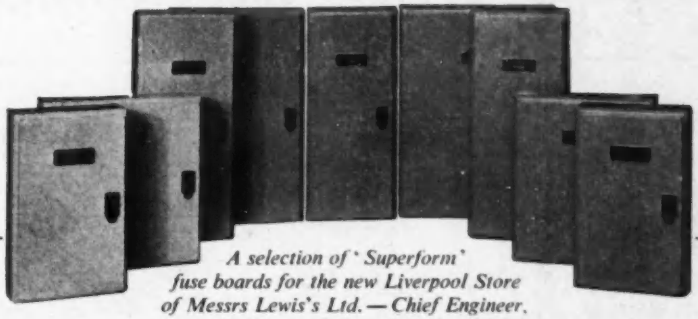
Distribution Fuse Boards



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'ENGLISH ELECTRIC' takes the lead in distribution fuse board design with the introduction of the new 'Superform' range.

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F.12

See the English Electric advertisement for Domestic Appliances which appears on page 52 of this issue

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June 30 – July 11, 1953

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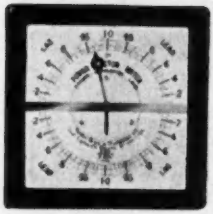

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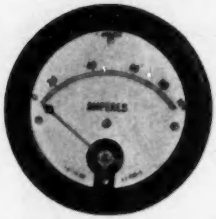
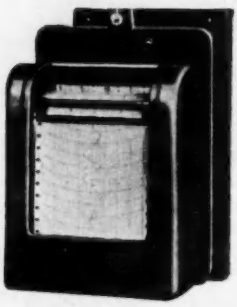
Induction Wattmeter, Type "SQB"

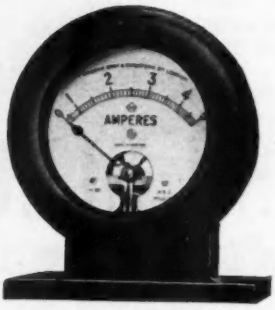


Hermetically Sealed Instrument

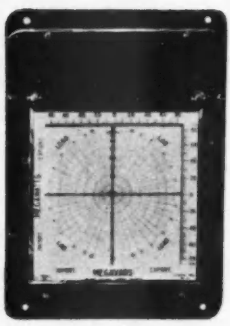
Circular Scale Ammeter



Graphic Recorder



Flameproof Controller Instrument



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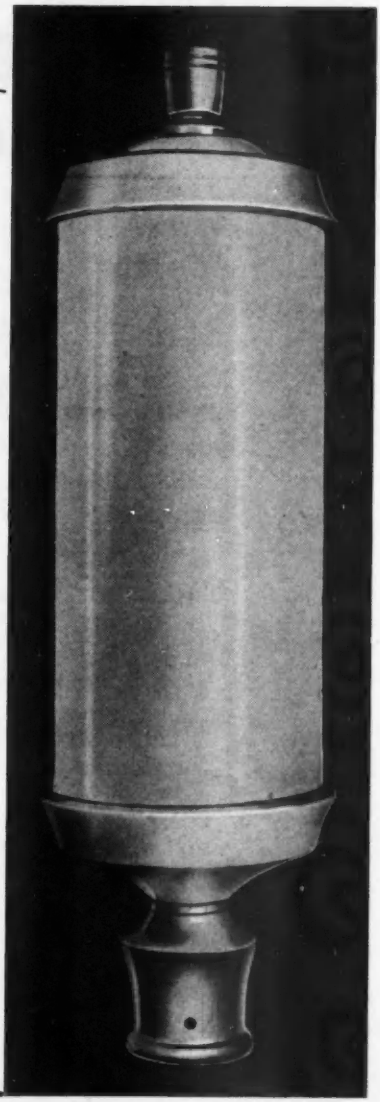

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ELECTRICAL TIMES

Volume 123 No. 3213 4 JUNE, 1953

PUBLISHED EVERY THURSDAY

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Editorial

UNIT OF MANAGEMENT

THE question of organisational structure continues to be a major subject of discussion within the administrative section of the supply industry, since any proposed changes may have important repercussions on the staff as well as the organisation itself. The hinge pin of the situation is the report on organisation by the committee under Sir Henry Self, a document the contents of which are closely guarded. However, it is commonly accepted that the committee favours evolution of a two-tier structure in suitable cases and it has been indicated that preference was towards the sub-area as the unit of management. On the other hand, certain area boards appear to be favouring considerably enlarged districts as the managerial centre. Such a view may prove to be an important matter for the status of staffs concerned, for although in theory it makes little difference what the basic management unit may be termed, the use of the word "district" may savour of demotion. There is nothing here, however, that cannot be settled by amicable discussion, but there is beginning to grow within the supply industry an uncertainty about the possible effects of changes in the future; uncertainty on the questions of redundancy, and on restriction of promotional opportunities. It would be useful if some reassurance could be given on such matters. Naturally the report of the committee is confidential, but some official indication of its possible implications and the safeguards for staff seem to be called for at the present time.

ENLARGED EXHIBITION

DELEGATES to the British Electrical Power Convention next week will find that the customary exhibition has survived the testing time of last year's curtailment and has returned impressively strengthened. Despite the doubts so loudly voiced at Brighton in 1951 and in earlier gatherings, manufacturers have decided that this shop window is one they cannot ignore. Once again there is a wide representation, on the hundred and more stands, of the many domestic appliances now on the market. To display these is the traditional rôle of the exhibition; this year, however, there is reinforcement of this show by a greater attention to switchgear and to distribution equipment generally. Such a move is wholly appropriate to the changed nature of the convention, with the greater proportion of delegates interested in distribution. Another change that is new this year is less sure of a welcome. This is the decision to open the exhibition to the general public on three whole days out of the five for which it will be available to delegates. From the point of view of the exhibitors, it must be doubtful if stands designed to interest the technical expert will effectively sell to the retail purchaser. Of greater importance, generally, is the effect on the customary use of the exhibition as a meeting place for delegates. This experiment will need to be watched carefully this year, to determine its worth for the future.

FAIR DEAL?

LAST week's news on electrical machinery exports to the United States provides a marked contrast with the gloomy prog-

In this Coronation Week we join with our readers in offering Loyal Greetings to Her Majesty The Queen

nostications voiced in April. At that time the American administration's remarkable action in calling for new tenders for generators and transformers at the Chief Joseph dam seemed to indicate a clear determination to exclude British manufacturers from the Federal power programme market. Now comes news of the successful capture by a British firm of a transformer contract for the Government McNary hydro-electric station. This in itself augurs well for the future, and hard on its heels there was news that in the more difficult conditions of the revised Chief Joseph specification, another U.K. company has kept its price, at least for transformers, below the U.S. best. Indeed, it has increased the difference between tenders. This is an important point since under the "Buy American" legislation, U.S. Government agencies can only purchase apparatus from abroad if the home price is excessive in comparison. Thus the American manufacturers have no need to better the British offer in order to gain preference over it. In the absence of any technical or financial loopholes, it now seems probable that at least the transformer component of the original contract must come to this country. If this is indeed the case, then the earlier decision, with all its attendant publicity, will have been to the good, since it at least secured some sympathy in America for the British case for "trade not aid."

CO-OPERATION AT GENEVA

NEXT week the Committee on Electric Power of the U.N. Economic Commission for Europe will be meeting at Geneva in its tenth session. Something of what this modest international organisation has achieved during its brief existence has been previously sketched in these columns: the agenda for the present augurs well for the months ahead. Much of the work of such a body is necessarily the slow compilation of statistics, the unexciting comparison and reconciliation of the relevant laws of different countries, and the conducting of fact-finding surveys for the parent organisation. Beyond this, however, there are more urgent tasks meriting greater interest. Two attract the attention in the agenda for the coming session. There is first the general consideration of rural electrification in Europe, which may prove to be of long-term importance for many European countries; the other, a tentative evaluation of prospects and practice regarding electric power production in back-pressure plants. Both subjects are topical in this country, and although they will be discussed in a wider setting at Geneva, the conclusions reached there cannot fail to be important for British engineers.

TOO STANDARD TARIFF

MANY difficult problems arise from the twin duties that the 1947 Act places on electricity boards, firstly to "promote the standardisation of methods of charge," and also to "avoid undue preference in the provision of supplies." One of the more awkward is provided by churches: they do not constitute domestic consumers, nor is church-going an industry. By a process of elimination, most Boards have concluded that churches must be classed with commercial establishments—and there the trouble has started. In many cases this standardisation has displaced a particularly favourable tariff, and the resultant increased charge has been startlingly large. The Southern Electricity Consultative Council has now set up a sub-committee to consider the whole question of whether churches, chapels, boys' clubs and similar institutions should form a separate class for tariff purposes, Though the conclusions reached can have strict relevance only to the S.E.B., they will deserve wider consideration. Churches, however, provide but one more example in the increasing number of cases where the advantages of standardisation appear to have been purchased at too high a cost; in some instances, indeed, the letter of standardisation is being preserved only by open modification, for particular consumers, of the calculations on which charges are based.

Meteor

The Deterioration of Varnish in Water

Experiments to determine water absorption of varnished cotton after successive immersions are described and discussed

By H. R. HEAP, B.Sc.

THE exclusion of moisture from electrical insulation is one of the oldest problems associated with electrical engineering. Whilst much work has been done in determining the effects of moisture on the electrical properties of the insulation, the permanent damage to insulating materials resulting from accidental contamination by flooding or other causes is not so well known.

It has been shown by Heinz* that s.r.b.p. bushings suffer permanent damage when allowed to become wet, and subsequent drying, whilst temporarily restoring the original power factor and insulation resistance, does not prevent the bushing from absorbing moisture at a greater rate than previously. It would appear that water absorbed by the cellulose in the insulation causes expansion of the fibres, and that the stresses thus produced cause cracking of the resin impregnant. This effect is not unexpected with s.r.b.p. bushings, owing to the brittleness of the straight phenol-formaldehyde resin used in their manufacture. However, it has been suggested that the modern varnishes, used for impregnating coils, for example on motor windings, are sufficiently flexible to withstand wetting of the insulation without suffering permanent damage.

Investigations on Moisture Absorption

An investigation was carried out to determine whether a varnish impregnated coil which has been allowed to become wet, is more sensitive to moisture absorption after being dried than in its original condition.

Three standard coils (Fig. 1) were wound on a ½ in. diam. mandrel and consisted of 6 layers of 0·036 in. d.c.c. wire, the winding being 4 in. long. Coils were dried for two hours at 130°C. before being dipped for 15 minutes one in each of the following varnishes :

Coil A in a solventless varnish.

Coil B in a thermo-setting varnish having good water resistant properties.

Coil C in a thermo-setting varnish in general use.

Fig. 1. The standard coil used for the tests, before varnishing. End leads are connected to each layer

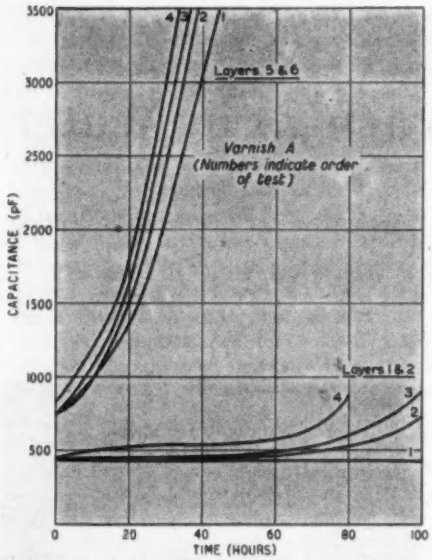
The coils were baked for 24 hours at temperatures recommended by the manufacturers (150 °C. for Coil A and 135° C. for Coils B and C). Coils were given a second dip and again baked at the stated temperatures for 24 hours. After the second dip, the coils were hung by the opposite end from that by which they were hung after the first dip. This was to provide a more uniform varnish film.

Both ends of each coil were dipped in a bitumen compound to seal the ends against entry of water between the coil and its former.

Test Procedure

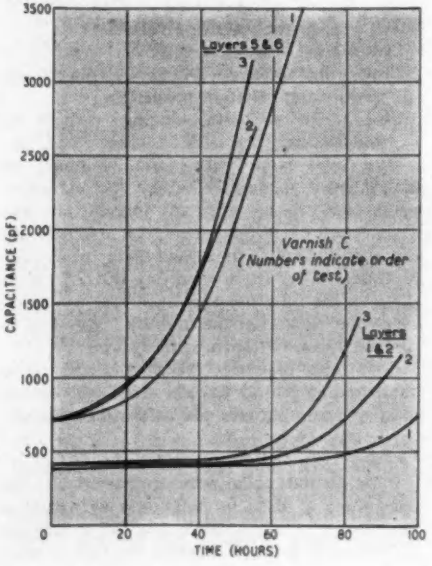
Impregnated coils were immersed in distilled water at 45°C. for 100 hours and readings were taken of capacitance and tan δ between coil layers in order to measure the rate of take-

* "*Insulation and Moisture*," by R. Heinz, B.E.A.I.R.A., Report ref., TRANS/T 157, Translation by B. Shearman.



Figs. 2 (above), 3 (right), 4 (below). Curves showing the increase in capacitance between layers, after successive immersions, for each variety

up of water. After this period, coils were removed from the water and dried for 24 hours at 105°C. This process was repeated for as many times as was necessary to show tendency to breakdown.

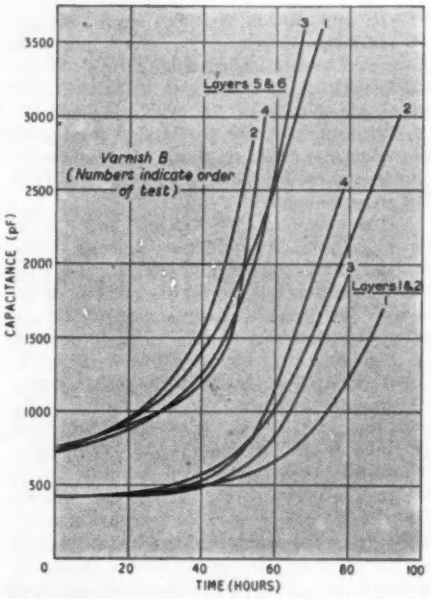


Results

Figs. 2 to 4 show the rise in capacitance between layer 1 and 2 and also betwen layer 5 and 6 for coils impregnated in each of the three varnishes, against time of immersion in water. Measurements of tan δ between layers gave similar curves and confirmed the water take-up shown by the capacitance curves.

Whilst some error has occurred in the case of the coil impregnated with varnish B (probably in the second cycle) the trend is clear for all coils, in that the rate of water absorption is increasing for each cycle of wetting and drying.

The fact that the capacitance returns to its



original value at the start of each cycle is evidence of the effectiveness of the drying process.

Comparing the results of three coils A, B and C; coil A shows a greater penetration rate for layers 5 and 6 than either B or C. It also shows a smaller rate of absorption into layers 1 and 2. Coil B appears to give a similar performance to coil C.

Whatever may be the mechanism by which water penetrates varnished coils, there seems little doubt that once penetration has taken place, a change occurs to the moisture resisting properties of the insulation. This is indicated in several ways by the results obtained by test. These may be listed as follows :

1. By the rapid non-linear increase in tan δ

and capacitance after the first and succeeding immersions;
2. By the generally increased slope of the near-linear part of the curves after the initial rapid rise;
3. By the general reduction in total time taken for the water to reach the centre of the coils with each immersion.

It is not claimed that the results shown in this article indicate the increasing rate of water penetration to be due to the theory suggested in the introduction. It is known that water may penetrate varnish films by molecular diffusion and the results found by test may, therefore, indicate permanent damage to the molecular structure of the varnish film.

It is evident from these experiments that cotton insulation, impregnated with any of the varnishes tested, undergoes steady deterioration under damp conditions. The three varnishes tested are typical examples of materials in widespread use for impregnating motor windings, so that the results are of interest to engineers involved in salvaging equipment damaged by water.

It should be emphasised that insulation resistance measurements after drying out are not a complete indication of the recovery of impregnated cellulose insulation and in cases where severe wetting has occurred a re-impregnation is recommended.

The author is grateful to the Electrical Research Association and to the Directors of Crompton Parkinson Limited, in whose laboratories the work was carried out, for permission to publish this article.

Our readers' views . . .

Street Lighting

I WAS particularly interested in Mr. T. C. Sack's article published in your issue of May 14th on the street-lighting system erected along part of the old Portsmouth Road, as I have to use this section of road on numerous occasions. I notice, however, he refers to a future extension from Kingston to the Surbiton boundary, and I presume that this is to fill in the gap between the existing Kingston mercury vapour system and the Esher sodium vapour. Which system is to be used in this gap is as yet unknown to me, but I presume it will be one or the other and in that case there will be an abrupt and sudden change from mercury to sodium at some point on the road. Such a sudden change is surely not in the best interests of road safety.

Turning to the more general question of street lighting, would it be possible for the lighting authorities to arrange a "tapering off" of illumination where a transition from group "A" to "zero" lighting takes place, particularly on high-speed arterial roads? There are many instances where the motorist, driving on sidelights in a well-lighted area, is suddenly confronted with a wall of blackness at the point where the lighting ends, and it sometimes takes several seconds before the eye accommodation becomes suitable for driving on headlights. A particularly bad example of this is at the beginning of the Watford by-pass, past the Stanmore road junction.

RICHMOND *"Night Driver"*

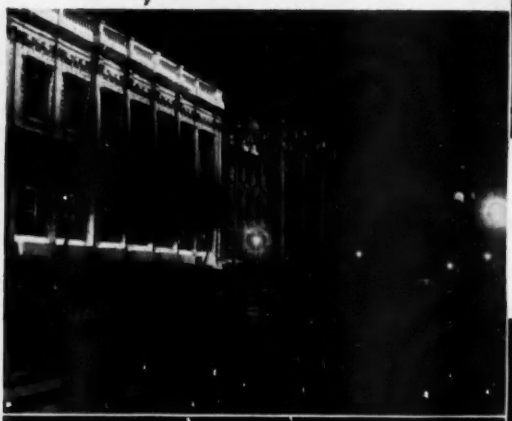
Small Portable Electric Tools

A RECENT experience makes me wonder whether, much as one dislikes it, restrictive legislation in the use of small "handy" semi-domestic electric drills and the like should not be instituted. I have such a machine that spends most of its time in a cradle on the bench in my garage with a small grinding wheel in the chuck—all as supplied by the makers. It is fed from a 2-pin and earth socket and is normally alive up to the switch on the machine. A short time ago the armature developed a fault. This was replaced and five weeks after I came home one evening to find the machine running although switched off.

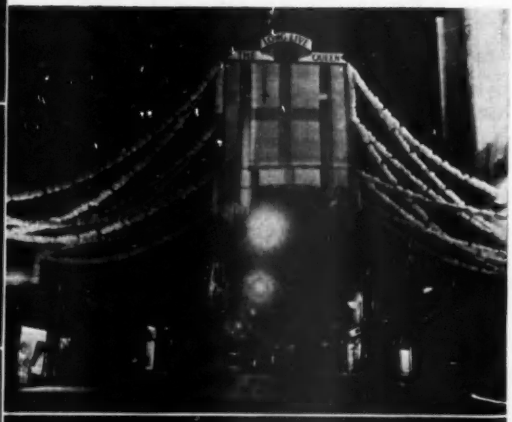
Examination showed a fault on the new armature and also a field coil down to earth. A little thought showed that the plug which had recently been removed and replaced had been wired up so that the switch in the drill was on the neutral side of the supply. Hence the faults. Now all this shows that the insulation of the machine could not withstand 240 volts a.c. to earth indefinitely—or, put another way, would inevitably break down. When one thinks what a chancy matter earthing is in the sort of home where a general utility tool is likely to be found one cannot help but fear the worst. As a matter of interest the British Electricity Authority in this area insist that portable tools used by contractors on outdoor installations shall operate on 110 volts with the mid-point earthed.

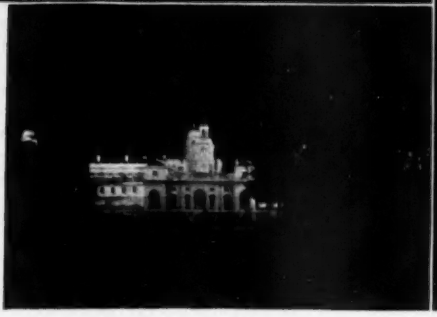
SUTTON COLDFIELD *D. Kingsbury*

Festive



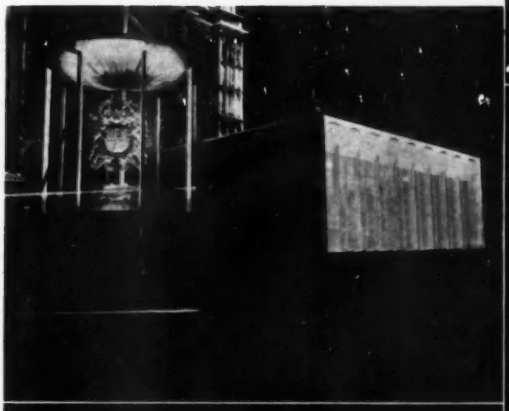
London, staid centre of the Commonwealth, has donned a gay coat of colour to show the joy of its citizens in their Queen's Coronation. These pictures of the capital show, on the left-hand page, the United Service Museum in Whitehall, The Abbey, Adelphi and Shell Mex House, Fleet Street, The Horse

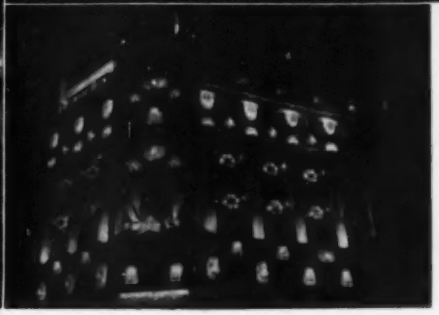




London

Guards Parade from St. James's Park, and the Festival South Bank site. On this page, Big Ben Tower surveys the seating stands, with the Institution of Electrical Engineers, the new Abbey Annexe, the Home Office from St. James's Park, London's County Hall, and Crown House, Aldwych, with noted electrical associations





Electric Vehicles during 1952

DISCUSSIONS and negotiations with Government departments necessarily play a large part in the work of trade associations, and it is no surprise to find in the annual report of the Electrical Vehicle Association of Great Britain a lengthy description of such activity during 1952.

Negotiations were conducted with the Ministry of Transport regarding the standardisation of foot controls on battery electric vehicles, and attempts to secure exemption from "C" licence regulation for driver-seated battery electric vehicles were continued. There was a meeting between representatives of the Association and the Deputy Chief Mechanical Engineer and another representative of the Ministry, to discuss the provision of safety (locking) devices on pedestrian-controlled vehicles, and visibility safety measures on driver-seated vehicles.

Battery vehicles in hospitals was a subject for discussion with the Ministry of Health, and there were consultations with Ministry of Supply on export matters. H.M. Customs and Excise were approached regarding certain minimum requirements for the acceptance of vehicles as mobile canteens, shops or workshops, for purchase tax purposes.

Purchase tax was a difficult problem for the electrical vehicle industry, and strenuous efforts were made to obtain its modification as applied to battery electric vehicles. In this year's budget, of course, there was evidence of success in this direction, the tax being removed so far as the electric vehicle chassis is concerned.

Amongst its more general activities, the Association kept in close touch with the French and German electric vehicle associations, and in this way and others, a close watch was maintained on overseas developments. Useful information regarding the use of battery electric railcars was obtained from Switzerland.

Statistics

In an appendix to the report, statistics are presented which show that new registrations for battery electric vehicles during 1952 totalled 2,713. Of these, 1,472 were vans and other driver-controlled types, 736 were pedestrian controlled vehicles, and 505 were invalid vehicles. The Association estimates that at the end of the year there were in Great Britain and Northern Ireland, 18,965 driver-seated electric vehicles and 8,694 pedestrian controlled vehicles, giving the total of both types as 27,659.

Membership of the Association at the end of the year totalled 30 full members and 33 associate members.

Seeboard's Standard Two-part Tariff

ONE standard domestic two-part tariff will take the place of fifty existing tariffs in south-east England on January 1 next. This is the principal effect of the latest measures for standardisation of tariffs announced by the South Eastern Electricity Board. From next January, new quarterly charges, uniformly graded according to the area of the premises, will be introduced, while the unit price—1d. p.u.—will be the same as that in existing two-part tariffs in the area. The quarterly charge will be based on the external area of the private dwelling, with a minimum of 13s. for up to 700 sq ft, and an additional 1s. 6d. per extra 100 sq ft up to a total of 2,000 sq ft.

Between 2,000 sq ft and 5,000 sq ft there is a charge of 1s. for each additional 100 sq ft, and for over 5,000 sq ft the extra charge is 6d. per 100 sq ft per quarter.

For prepayment supplies there will be a charge of 2s. 6d. p. q. for a p-p. meter for the collection of unit charges only, and of 5s. where quarterly and unit charges are to be collected.

The new tariff will apply to approximately 700,000 consumers, of whom about 200,000 will pay less or the same as at present, and 500,000 will pay more, the Board state.

The resulting additional revenue is estimated at £110,000 in the first year and £190,000 p.a. thereafter. This is an increase of revenue from domestic two-part tariff consumers of about 1·4% in the first year—in which quarterly charge credits and adjustments will be effective—and 2·4% in later years. The Board points out that at present some quarterly charges are payable in advance, some in arrear, some partly in advance and some partly in arrear. Under the new tariff they will all be related to the last day of the month in which the meter is read. The methods of assessment of the existing quarterly charges include the area of premises, rateable value, installed capacity, number and size of rooms, and maximum demand—quite an assortment, in fact! The abolition and the streamlining of tariffs should result in a saving in administration costs.

Instrument Transformer Errors

SOME NOTES ON THE MEASUREMENT OF ELECTRICAL POWER

by H. JOYCE

THE accurate measurement of electrical power, it will be appreciated, is frequently a vital factor in performance testing, etc. The current and voltage values obtaining at the machine are required, in many cases, to be scaled down by means of current—and voltage—transformers to values suitable for normal measuring instruments. Both the meters and instrument transformers will, in general, be subject to inaccuracies, the values of which may be determined by comparison with accepted standards. These inaccuracies and their combined effects must, therefore, be taken into account in the evaluation of the measured power. It is sometimes possible for the calibration of the measuring apparatus to be done with the meters, instrument transformers and leads complete as a unit, an overall correction factor thus being obtained. This, however, is not always possible or practicable, in which case the calibration data for the individual components only may be available. It is then necessary to compute the overall correction factor from the individual errors. In particular, the effects of the combined phase angle errors in the V.T. and C.T. only are not available for direct application and a consideration of these is the purpose of this article.

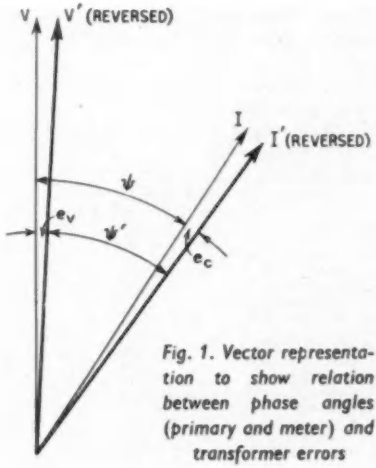


Fig. 1. Vector representation to show relation between phase angles (primary and meter) and transformer errors

It is sometimes required that the method of calculating the value of power (starting from the meter readings and incorporating separate meter and instrument-transformer calibration data) shall be shown in a step-by-step form of presentation which is readily and independently checkable from first principles. A method of evaluating the combined instrument transformer errors is given here together with an example from a typical form of presentation.

Calculating the Corrections

The following describes a method of determining the true power in a circuit (as indicated by the conditions at the primaries of voltage and current-transformers and from a given value of power measured at the secondaries) in which the phase angle errors of the V.T. and C.T. can be developed to give a combined phase angle correction factor and applied with the V.T. and C.T. ratio correction factors. The method is exact and only necessitates the use of trigonometrical tables. The following nomenclature has been adopted :

W = Secondary power.
W′ = Primary power.
V = Magnitude of secondary volts.
V′ = ,, ,, primary ,,
I = Magnitude of secondary current.
I′ = ,, ,, primary ,,
φ = Circuit power angle, electrical degrees.
ψ = Secondary (meter) power angle, electrical degrees, viz. $\angle V - \angle I$ (angles positive in anti-clockwise direction).
ψ' = Primary (meter) power angle, elect. deg.
e_v = V.T. phase angle error (positive value indicates secondary leads primary), electrical degrees.
e_c = C.T. phase angle error (positive value indicates secondary leads primary), electrical degrees.
e = Combined phase angle error, $= e_v - e_c$, electrical degrees.
k_v = V.T. corrected ratio, i.e. nominal ratio × ratio correction factor.
k_c = C.T. corrected ratio, i.e. nominal ratio × ratio correction factor.

The true primary power, W′, is given by:

$$W' = W (\cos e + \tan \psi . \sin e) (k_v . k_c)$$

where cos e + tan ψ . sin e is the combined correction factor for the overall phase angle error, $e = e_v - e_c$, in the V.T. and C.T. The following points should be borne in mind:

(1) When the current leads the voltage the power angle becomes negative.

(2) For single phase power $\psi = \varphi$ where φ is obtained from $W = VI \cos \varphi$.

(3) For three-phase power measured by two watt-meters $\psi = \varphi \pm 30°$.

where φ is obtained from $\tan \varphi = \frac{\sqrt{3}(W_2 - W_1)}{W_1 + W_2}$

$\psi = \varphi - 30°$ is associated with the major power reading and $\psi = \varphi + 30°$ with the minor reading.

Derivation of Phase Angle Correction Factor

Primary power $W' = V' I' \cos \psi$, (see Fig 1.)
$= k_v k_c VI \cos (\psi - e)$, where $e = e_v - e_c$*
$k_v k_c VI (\cos \psi \cos e + \sin \psi \sin e)$

Secondary power $W = VI \cos \psi$

as Primary power = Secondary power times the correction factors.

Then $W' = W (\cos e + \tan \psi \sin e) (k_v . k_c)$

To show the method adopted for setting out the results a typical test arrangement is reproduced in columnar form.

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*It will readily be seen that $\psi' = \phi - e$, where $e = ev - ec$ is true for all value of ϕ, ev and ec.

SUMMARY OF ELECTRICAL POWER CALCULATIONS

Test No.	1	
Nominal Load (M.W.)	60	
Duration of Run (hr)	2	
Meter Phase	Red	Blue
Final Meter Reading	4·83455	5·88832
Initial Meter Reading	4·39059	4·70569
Meter Advance; Meter No.: Red, 625820; Blue, 625819	0·44396	1·18263
Meter Correction Factor (Division)	1·0058	1·0071
Corrected Advance	0·4414	1·1743
Meter Circuit Power Angle, $\tan \phi = \frac{\sqrt{3} . (W_2 - W_1)}{W_1 + W_2} / \phi$	0·7857	/ 38°-09′
Instrument Power Angle, ϕ	68°-09′	8°-09′
tan ϕ	2·4939	0·1432
V.T. Phase Angle Error (Minutes of angle), ev Trans. No.: Red, 122667; Blue, 122668	+5·5	+10·5
C.T. Phase Angle Error (Minutes of angle), ec Trans. No.: Red, 122692; Blue, 122693	+3·5	+2·5
Phase Angle Error, e = (ev − ec), (minutes of angle)	+2·0	+8·0
sine e	0·0006	0·0023
cosine e	1·0000	1·0000
Phase Angle Correction Factor (Multi) = cos e + tan ϕ sin e	1·0015	1·0003
V.T. Ratio Correction Factor (Multi)	1·0031	0·9992
C.T. Ratio Correction Factor (Multi)	1·0015	1·0013
Overall Correction Factor (Multi)	1·0061	1.0008
Corrected Meter Advance × K where K = (600 : 1 × 600 : 5 × 1)	31,781	84,550
Corrected Primary Advance	31,975	84,618
Total Corrected Energy (kWh)	116,593	
Gross Corrected Power (kw)	58,297	
Primary Power Factor	0·787	

Electrical Accidents in 1952

STATISTICS issued last week by the Electrical Branch of the Ministry of Labour's Factory Department show that during 1952 there were 136 electrical fatalities. Of these, 56 occurred on premises of a domestic or similar character and 80 on premises of an industrial or similar character, of which 38 occurred in factories. These totals compare with 38 in the home and 34 in the factory in 1951. Further details of the accidents are given below.

Of the accidents on domestic premises, seven occurred in bathrooms. Four of these involved electric fires, one a hair-dryer, and the remaining two electric towel rails.

Domestic, etc., premises		Industrial and miscellaneous premises	
Electric fires	7	Switchgear	8
Electric cookers and washers	2	Fusegear	1
Electric towel rails	2	Crane trolleys	1
Cables and flexibles	6	Portable tools, etc.	7
Radio sets, etc.	4	Portable lamps	4
Electric irons	2	Portable heaters and irons	1
Electric lamps	4	Cables and flexibles	19
Electric hair dryers	2	Testing	2
Plugs and adaptors	5	Plugs and adaptors	1
Electric blankets	1	Live rails	7
Portable tools	3	Overhead lines	15
Vacuum cleaners	1	Radio transmitters	1
Electric kettles	3	Miscellaneous	13
Miscellaneous	14		
Total	56	Total	80

The Tomb of the Prophet

New Lighting Installation at Mecca

THE tomb of Mahomet, in Mecca, is visited annually by hundreds of thousands of the faithful. This year's pilgrims, however, will be the first to see the Grand Mosque, with its great enclosed courtyard with the sacred Kaaba in its centre, illuminated by fluorescent lighting. The inner side of the courtyard wall is occupied by an arcaded cloister, and twenty-four gates lead into the vast enclosed space while seven minarets rise from the wall itself. Lighting is being provided for the cloister, the courtyard, the Kaaba, the entrances and floodlighting for the minarets. In the arcade, 217 special fittings housing six 5 ft 80 watt Osram tubes will be used and eight fittings using four 5 ft tubes. General floodlighting of the courtyard is provided by 28 decorative fluorescent floodlights each consisting of twelve 2 ft 40 watt Osram tubes mounted radially. Round the Kaaba, 28 new lanterns, housing six 2 ft. 40 watt tubes will be used and 36 wall bracket lanterns in bronze and cathedral glass with 300 watt tungsten lamps will be used. Each minaret will have two floodlights with 400 watt Osram mercury lamps lighting it from outside the Mosque, while a contrasting light will be provided on the other side by 1,000 watt tungsten projector lamps in narrow angle floodlights. Total load for the new scheme, designed and engineered by G.E.C., is in the neighbourhood of 200 kW.

These pictures show (above) an artist's impression of the courtyard fluorescent floodlight. (Below) the Chief Fittings Designer of the General Electric Co. discusses one of the new fittings with Mr. Juffali, from the Company's Saudi Arabian agents at a Birmingham factory of the company, and below an artist's impression of the installation. The small panel mounted above the fittings carries the word "GOD" in Arabic script

The Convention Exhibition

SWITCHGEAR DISPLAYS NOW TAKE A MORE PROMINENT PLACE AMID THE EXHIBITS OF DOMESTIC EQUIPMENT

MAKING a welcome return to this year's British Electrical Power Convention, the exhibition of domestic appliances and electrical equipment is again one of the centres of attraction for delegates and visitors. Although this event is confined in the main to displays of domestic electrical appliances, ranging from cookers to refrigerators, there is a notable contribution from switchgear, accessory and other manufacturers. Moreover, a considerable proportion of exhibitors are taking advantage of the exhibition to introduce new products.

Held in the Grey Cars Garage, Torwood St., it will be open each day of the Convention from 10 a.m. to 6 p.m. apart from one hour midday, excepting Friday, when it closes at 4 p.m. Admission from Tuesday onwards is available to both delegates and ticket holders, whilst during the last three days the general public will also have an opportunity to view the exhibits. On Monday, however, delegates only may gain admission, and on this day Sir John Hacking, Convention President, officially opens the exhibition at 8.30 p.m.

Cookers

Cookers are among those appliances in which new models are to be found. Making its debut on the Revo Electric Co's stand is their "Monarch" cooker designed for large families. One of its attractive features is "eye-level" control, the controls panel being built into the splash plate, which may be removed for access to wiring. Placing the switches in this position has permitted both an increase in the oven capacity and additional lagging. Having a capacity of 2,960 cu. in. the oven is stated to be large enough to accommodate utensils side by side. Hob equipment comprises two 8 in. boiling plates and a 10 in. by 8 in. grill plate.

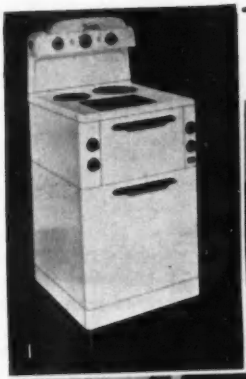
The Simplex Electric Co. are also introducing a new cooker, their "Super Comet" model. An addition to their Creda Comet range of cookers, the newcomer brings with it several features not previously seen in others in the series. Mounted on a central panel at the back of the cooker is a time switch, clocks and dials together with a colour signalling code. This is designed to show not only whether oven, grill or boiling plates are on, but the state of temperature to which they have been set. Concealed lamps provide illumination for the hob, which has four radiant type boiling plates.

Featured on the Jackson Electric Stove Co's stand is their new "290" model cooker. This cooker has a light-weight lift-off hob, hand-level controls, built-in towel rails, whilst for ease of maintenance, unit construction wiring assembly has been adopted.

Their model "64 AB" Streamline cooker is being displayed by Belling and Co. Ltd., in which automatic oven lighting and an inner glass door are but two of its features. Also showing cookers are to be found the General Electric Co., exhibiting models in a range of sizes, Tricity Cookers Ltd., with their "Queen" model, being shown for the first time, Falco Electrical Appliances Ltd. and British National Electrics, who are featuring their de luxe model "C 49."

Among cooker components, the Backer Electric Company Ltd., feature twin-circuit, single tube boiler plates. Meeting E.D.A. specifications and having pin-type, plug-in

Shown on the right are (1) Tricity's new "Queen", (2) Pyramid aluminium ware in use, (3) the Revo "Monarch," (4) English Electric's washing machine with its 3 kW built-in immersion heater, (5) a twin circuit boiling plate by Backer Electric, (6) the Jackson "Clear-View" cooker, (7) "Servis" JSR 76 refrigerator, (8) hob and control panel of the Simplex "Super Comet," (9) Burco's 10P washing machine, (10) LH150 refrigerator by Electrolux, (11) EW50/H washing machine by Parnall (Yate), and (12) Falco's "Royal" cooker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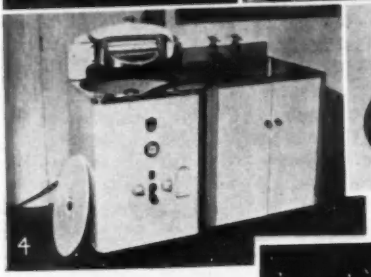
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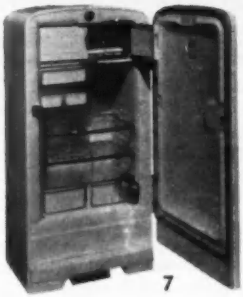
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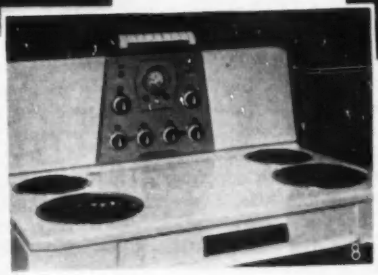
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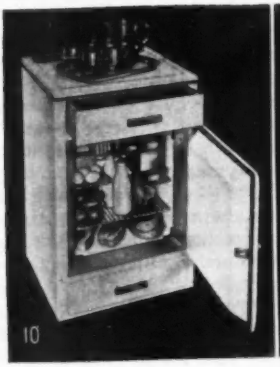
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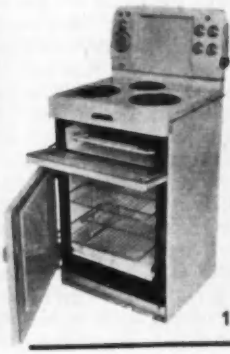
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connections, these are recent additions to this company's products. The Rheostatic Co. are showing thermostats, both stem type and hydraulically operated capillary type, for cooker ovens, whilst a new range of single- and double-pole, 3-heat switches and multi-circuit a.c. switches for cookers may be seen on "Diamond H" Switches' stand.

An exhibit on the Horstmann Gear Co.'s stand is their "Auto Time Control" which, incorporating a delay mechanism, may be used to control cookers and other appliances. The well-known "Simmerstat" is being displayed by Sunvic Controls, together with single circuit type radiant boiler plates.

Electric Space Heaters

Under the generic heading of electric heating appliances are found a range of radiators and fires representing the usefulness of electricity for domestic space heating. New products are again to be found, including the range manufactured by Ferranti Ltd., of contemporary design. Panel, wall and portable types are being produced by this company, each fire fitted with safety guards to comply with current regulations.

An exhibit of topical interest is seen on the Dimplex stand in their "Coronation" model oil-filled radiator. Recently added to their range of these appliances, the "Coronation" has a 1·25 kW loading and is designed particularly for installation below windows. Like other products of their type the new radiator is fitted with a thermostat and may be supplied with feet, castor wheels or wall brackets.

Bulpitt are showing their new "Waldorf" fire; in addition a range of "Swan" kettles and other appliances; whilst a feature of Bratt Colbran's exhibit is the "Safe glow" flood heater; designed for use in nurseries, bathrooms or other locations where safety requirements are particularly stringent. The Coronation provides the theme for Berry's Electric stand, where "Magicoal" fires are prominently displayed, and from the E.M.I. group, examples of both radiant type fires—the "Bruton de-luxe" being an attractive streamlined model—and room heaters are on view. A portable panel radiator of 500 W rating, is a newcomer to those being shown by Hurseal Ltd. and is known as the "T.V.½." Henry Wiggin and Co. display examples of nickel-alloys for use as heating elements, and "Kanthal" and "Nicralloy" high temperature resistance alloys are featured pictorially by Hall and Pickles, Ltd.

It is but a short step from space heating to water heating in its various forms and in this sphere may be seen, exhibited by the Hotpoint Electric Appliance Co., a new 3-gallon thermal storage heater of the non-pressure type. In a cream enamel finish, it is of flat-D construction for flush wall mounting. A thermostatically controlled, 1 kW "Torribar" sheathed-wire element provides heat, whilst the tank is of hot-tinned, welded copper, insulated with granulated cork.

The centre piece of the Heatrae stand is the attractive model D.O.T. water heater. This, a displacement type unit, is made in 1½ and 3 gallon sizes for supplying hot water to one position. Outlet flow is controlled by a valve at the cold water inlet. Designed with flat back for top and bottom fixing, the heater can be conveniently adapted to supply hot water through a permanently open outlet fitted to the wash-basin.

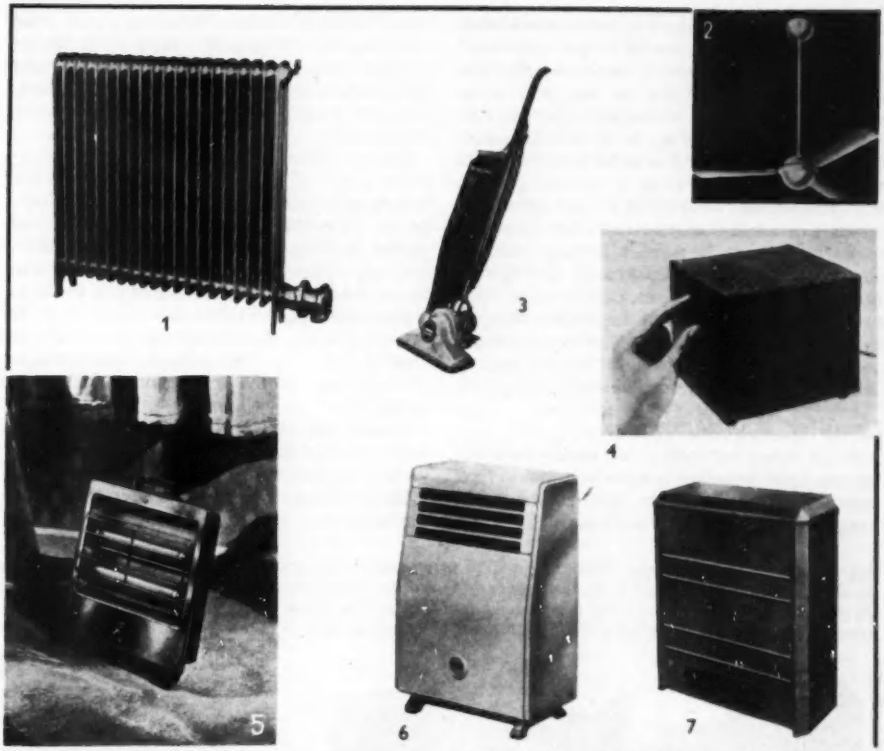
Gillott Electro-Steam Cookers Ltd., have recently begun production of a range of "Electrosteam" sterilising equipment for farm use. Representative of these products is the "S 16" a "bucket" type model of sterilising chest capacity of 16 cu ft. The hot water loading is 1 kW, and that for the steam boiling tank 4 kW, steam capacity being 12 lb/hr. It has, moreover, a draw-off hot-water capacity, at a minimum of 150° F, of 15 gallons. Tanks and framework of the unit are in heavy gauge galvanised. Steam tight doors, operated by clamps designed for easy action, are fitted to be reversible, for opening on either left or right hand hingeing.

In addition to a new sink water heater, Aidas Electric are displaying a new Sadia water heater of 30 gallon capacity for use in schools, which they are now making available for other industrial applications.

Steam Generators

Specially designed to cater for requirements of smaller premises is a 15 kW electrode steam raiser being shown by G.W.B. Electric Furnaces Ltd. Recently shown for the first time at the B.I.F., this hand-operated unit can be used to supply hot water for space heating and other purposes in workshop, store or home. Based on the design and principles of larger heaters made by this company, the unit is stated to supply 51,000 B.Th.U/hr or 30 gallons of water at 160° F in 2½ hours at moderate running costs. Provision is made to vary the output from 10 to 115% of its rated value. A display depicting two electrode boiler installations, for space heating and steam generation, is being shown by Bastian and Allen Ltd.

Immersion heaters for domestic use are prominently displayed by Geo. Bray and Co. together with examples of their metallic em-



(1) *A Duncan Low radiator* (2) *Crompton Parkinson fans of this type are installed in the Exhibition hall* (3) *Hotpoint's new model vacuum cleaner* (4) *J. and H. Walter have this "ozoniser"* (5) *Bratt Colbran's No. 253 Fire* (6) *new Ekco Thermovent SR Series* (7) *G.E.C. new storage space heater*

bedded strip, ring and rod elements, while Duncan Low are also featuring immersion heaters, showing a new range of top entry types. On the Santon stand may be seen "Otter" thermostats controlling both their vertical and horizontal immersion heaters, with indication of control accuracy given by Negretti and Zambra recorders. A recent introduction in their range of thermostats plays an important part on the Maclaren Ltd. stand. This newcomer, model "A.C.M.", is a stem type unit incorporating a diaphragm snap switch of novel design.

Washing Machines

Washing machines are rapidly becoming regarded by the housewife as indispensable as the vacuum cleaner in labour saving equipment and the number of additional aids provided to alleviate the wash-day drudgery now built in with the basic unit reflects this changing attitude. English Electric are introducing two such additions this year, to their range of machines. One is their model 4003 machine, in which is incorporated a 3 kW immersion heater, a power wringer of 12 in. effective length and an automatic draining system. The other is a rotary ironer attachment, thermostatically controlled over a range of temperatures for use with their washing machines.

A washing machine embodying water heating forms a prominent part of the Parnall (Yate) stand. Stated to be capable of raising 7 gallons of water from 50° to 160° F in approximately 1½ hours, and to boiling temperature in just over two hours, the machine has a heater loading of 2 kW. Controls for this unit are located in the wringer storage compartment. A model having the same capacity is available without the heater.

Of the cabinet type, the "Servis" washing machine featured by Wilkins and Mitchell Ltd. incorporates a 3 kW element, stated to boil the water in just over an hour. Provision is made

to cut out automatically the heater should the tub be empty of water whilst a pilot light indicates when it is connected to the supply. Its operation is independent of the remaining controls. A recently introduced development may be seen exhibited by L. G. Hawkins and Co. known as the "Posser-Matic", it is an attachment for converting a vacuum cleaner and conventional wash boiler into an automatic washing machine. Burco Ltd., are showing their "10 P" machine with heating element incorporated, whilst a new type of heating element for washing machines, based on the twin circuit principle, is part of the Backer Electric Co's exhibit. Also showing washing machines are Hoover Ltd., the Hotpoint Electric Appliance Co. and the Universal Boilers and Eng. Co.

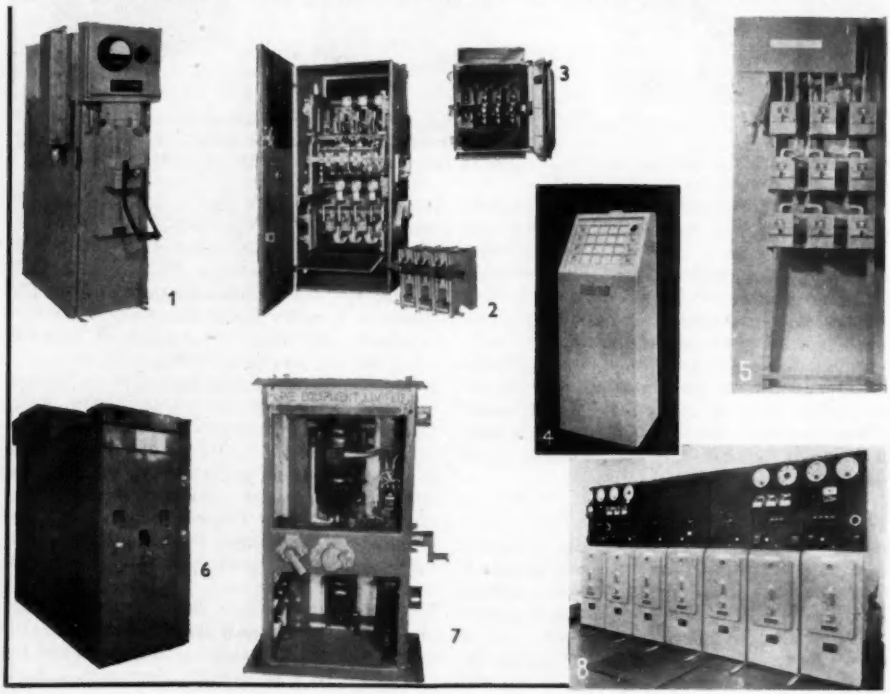
Smaller Appliances

In the range and variety of smaller domestic heating appliances few housewives should find their tastes unsatisfied. In lightweight type of iron, Premier Electric Heaters Ltd., are showing their "Sylph" model. Weighing 3¼ lb., this iron uses the "Premicoil" cased coil element which, cast in the base aims at ensuring rapid heat transfer to the fabric. Automatic, variable, heat control provides a range of operating temperatures.

Electric kettles are such commonplace appliances that it is rather surprising to find the variety of refinements which have been added. In the "Fanfare" model, which can be seen on the Best Products' Ltd. stand, the spout is not only fitted with a musical alarm, but can be adjusted to 15 different degrees of pouring, either emptying the kettle in a few seconds or providing a fine flow to fill narrow necked or small containers. The base is detachable to permit access to the immersion type heating element.

Hague and McKenzie Ltd., display "Pyramid" ground base aluminium utensils for a variety of purposes. Here can be seen a milk saucepan having a fitted lid, a porringer/saucepan with interchangeable lid, and dual purpose

Below are seen (1) *Johnson and Phillips type AG16 switchgear,* (2) *Electrical Apparatus Co's. industrial c.b.* (3) *the "Imperial" fuse switch by Bill Switchgear,* (4) *Walter Kidde's control panel for their fire extinguishing system,* (5) *an assembly incorporating Chilton "Atlas" switches,* (6) *air-break circuit-breaker by Reyrolle,* (7) *Line Equipment's V.B.R.T. isolator, and* (8) *a c.b. board of Yorkshire Switchgear manufacture*



batch egg poacher/pudding steamers. On the E.M.I. stand is a "streamlined" hair-dryer, incorporating a 600 W heater, which on its adjustable stand, leaves both hands free during operation. A new clothes drying cabinet is seen in the Belling and Co's model 107 A.

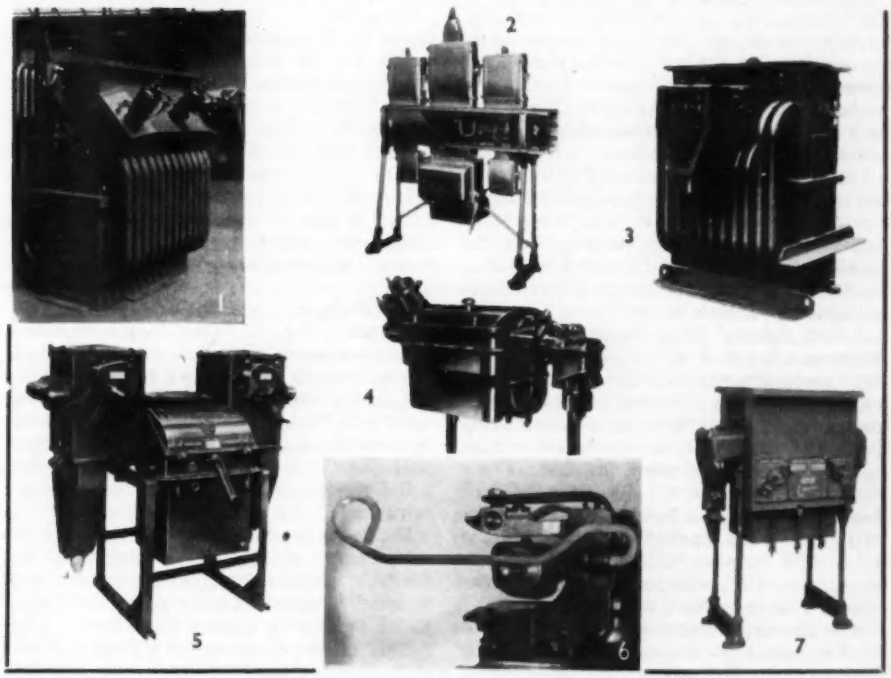
Refrigerators

By way of contrast to heating appliances, a considerable variety of refrigerators are being displayed, many on the stand organised by the British Refrigeration Association. Five companies are represented on the stand by examples of their domestic refrigeration equipment all of which operate on an hermetically sealed system suitable for any standard a.c. supply.

Over and above this display, individual companies show refrigerators on their own stand. The G.E.C. features its new model "DE 71", of 7 cu ft capacity yet occupying no greater floor space than the 5·3 cu ft model. Employing sealed refrigeration, the system is stated to cause no radio interference. Its stainless steel freezer incorporates a shelf, whilst other features include a covered, deep plastic chiller for meat or fish, two plastic saladors and provision for tall bottles. Eye-level thermostatic control is provided, together with interior illumination switching off as the door closes.

Of the two "Servis" refrigerators being shown by Wilkins and Mitchell is the "Super de Luxe" model (JSR76), in which the freezer, of stainless steel, is stated to be capable of holding 26 lb of frozen food. Regulation of the cold air circulation is effected by equipment mounted on the plastic drip tray. A table top refrigerator is to be seen on the Hotpoint Electric Appliance Co's stand. This, a 4½ cu ft capacity unit, has been fitted with "Perspex" door and panels for display purposes. Completing the range of appliances on the English Electric stand is shown their 7·6 cu ft refrigerator, model 76A, whilst Electrolux are also showing appliances of this nature.

Here are shown: (1) *a transformer to B.E. specification T.I. by Transformers (Watford) Ltd.,* (2) *a Simplex "Regent" switchgear panel,* (3) *Patridge Wilson's 100 kVA transformer,* (4) *G. Ellison star-delta starter* (5) *the ring main unit by Statter,* (6) *close up of contacts of 3ph. H.O.R.P. disconnecting switch by Switchgear and Equipment, and* (7) *the Crompton Parkinson "ARA 2" ring main unit*



Powered Appliances

In the range of powered domestic appliances, the same company display the "Electrolux" floor polisher, driven by an a.c./d.c. motor fitted with interference suppressors. Having a triple brush action, its shape is especially suited for corners and it may, moreover, be used to polish table tops. Two sets of brushes are provided, one for waxing and the other polishing, and in addition the air stream from the air-cooled motor is used to assist in drying the polish as it is applied.

In their vacuum cleaners, Hoover Ltd., show the "Junior" model, which, operating on the "Hoover" principle of beating, sweeping and suction, should prove particularly useful for the limited accommodation so common at the present day. Under the name "Goblin," the British Vacuum Cleaner and Eng. Co., display on their stand both domestic and industrial type vacuum cleaners.

Illumination Equipment

A newcomer to the range of lighting fittings being shown by the Edison Swan Electric Co., is their "Unilux" at 5 ft, 80 W fluorescent lamp, batten type unit. One of its features is a fixing method designed to facilitate installation. Two screws only are required to hold the fitting to the ceiling. These may be inserted in the ceiling before placing the fitting over them, two-way key-hole slots and "Pendicone" washers permitting this procedure. The fitting itself comprises a tapered channel body, fitted with white plastic b.c. holders.

Emphasising manufacture and quality control of their "Mazda" lamp, B.T.H. are using flow diagrams and transparencies to trace the filament production in its entirety, from the metallic ore to the final coil of over 3,500 turns. Illustrations of lamp component assembly and testing complete their feature.

Among lighting fittings being displayed by Benjamin Electric is to be seen their "High Bay" model designed for lofty interiors. Fitted with a heavy duty "Saaflux" top and clear glass, "Visor" cover, the lamp is claimed to be dust-proof, requiring little maintenance in view of its inaccessibility when installed. From Falk, Stadelmann & Co., is their "Glen" fluorescent fitting, for wall mounting horizontally. Finished in cream stove enamel, it holds a 4 ft., 40W lamp for both upward and downward illumination, whilst a "Perspex" diffuser screens it for all normal angles of viewing.

Also showing lighting fittings, Ekco-Ensign Electric have a new product in a floodlighting lantern, whilst Philips Electrical are devoting their stand to a display of "Argenta" internally silica coated lamps and Thorn Electrical feature their new industrial trunking fitting.

Switchgear

Turning to industrial and power supply equipment being shown at the exhibition, there are to be seen various types of high voltage switchgear on several stands. Included in this category are Ferguson Pailin, Ltd., showing an 11kV fuse switch, ring main unit—a new addition to their switch-gear productions. It comprises a type "O.F.S." oil immersed fuse switch, fitted with ring main oil immersed switches on either side.

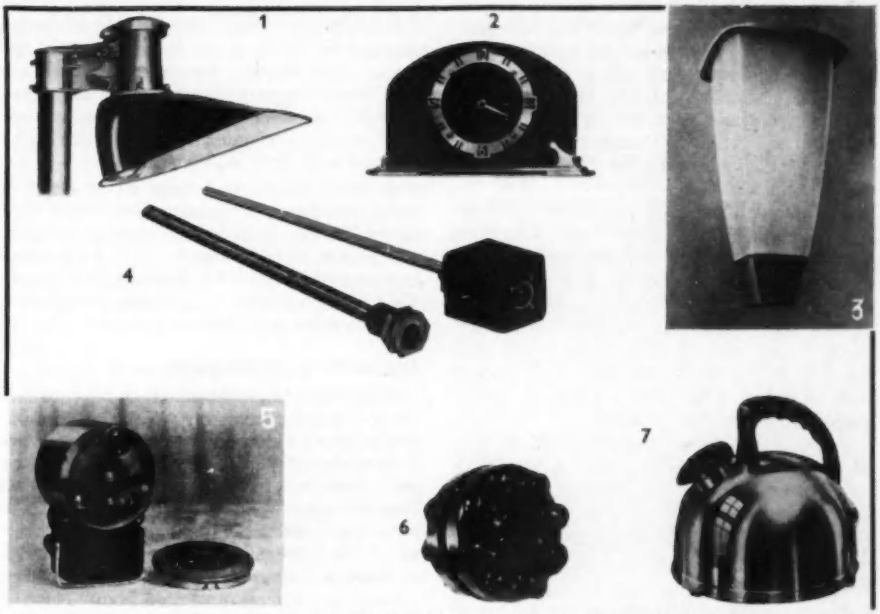
Starting and motor control gear shown by George Ellison, Ltd., includes a 60A oil-break, star-delta starter, and a control panel comprising a 60A oil-break circuit-breaker together with their oil-cooled rotor starter unit in which the tank has been cut away to show its resistance units.

A 3·3kV, 1,600A, 150MVA duplicate busbar, air insulated panel with air-break circuit-breakers, plays a major part in Reyrolle's stand. Of cubicle pattern, separate compartments house both sets of busbars, their isolators c.t.s. and the c.b., which is solenoid-operated.

Items from the range of switchgear being shown by Switchgear and Equipment, Ltd., include a single pole 33kV, 1200A horizontal opening, rotating pedestal type, disconnecting switch. Having insulators of the Lapp 8425 pattern, the switch is being shown arranged for lever operation to demonstrate opening and closing mechanisms. A feature of a 33 kV, 600A, single break r.p.t., d.s. also being shown is the "S. and E" load breaking interrupter head, a new development by this company at present undergoing preliminary tests on a 66 kV o.h. line system.

Bill Switchgear are showing for the first time their "Imperial H.R.C." type of heavy duty switchgear for industrial applications. Giving positive indication of switch position, this unit is shown fitted with a mechanical on/off indicator. A new exhibit is also featured by the Electrical Apparatus Co., this being a 300A industrial circuit-breaker, together with a 3·3 kV contactor and 440 V heavy duty contactor.

Designed for supply service at 11 kV in either indoor or outdoor substations is the "ARA2" fault-making, load-breaking ring main unit being shown by Crompton Parkinson. Rated to carry a maximum continuous load current of 400 A, the switch making symmetrical current capacity is stated to be 21·9 kA



(1) Benjamin high angle reflector, (2) the "Argyll" Denis Ferranti clock, (3) Siemens have marketed this new outdoor fluorescent fitting, the "Cathay," (4) McLaren new water heater thermostat, (5) Horstmann flasher unit for zebra crossings, (6) One application of Tufnol is this insulated pipeline coupling, (7) Best Products' new "Fanfare" kettle

r.m.s., with a peak of 55·9 kA for both main and earthing contacts.

Yorkshire Switchgear's exhibit includes a three-panel outdoor switchboard consisting of a fault-making isolator, automatic o.c.b. and switch-fuse unit. Although designed primarily for outdoor service, it may be used in inside substations. The switch-fuse unit incorporates means whereby all three phases are opened should one fuse element operate.

A recent introduction to their range of switchgear forms a prominent part of J. G. Statter's stand. This item comprises a non-extensible ring main tee-off equipment in which two non-automatic oil switches control the ring main, whilst the tee-off control is provided by an automatic fuse switch. For use on systems operating at up to 11 kV, the gear has a rupturing capacity of 250 MVA. South Wales Switchgear Ltd. display a model of an outdoor substation of the "racket" type, employing 33 and 11 kV metal-clad, air insulated vertical isolation oil-immersed c.b. units controlling two 7·5 MVA, 33/11 kV 3 ph transformers. Also showing h.v. switchgear for use on o.h. lines are Line Equipment Ltd., and G. P. Dennis display a heavy industrial fused switch distribution switchboard, using new 600 A and 800 A t.p. and n. switches. An insulating white paint, for switch-box interiors, is displayed for the first time by Donald Macpherson and Co., whilst Cobra (Wood Treatment) Ltd. illustrate their service for inspecting and re-impregnating wood poles.

Supply equipment being displayed includes power transformers, given pride of place on Partridge, Wilson and Co.'s stand. Here may be seen a 6,600/433-250 V unit of 100 kVA rating, for standard supply voltages, built to the B.E. specification T.1. A cut-away portion of the tank shows, in a novel manner, the transformer mounting. Also showing transformers to this specification are Transformers (Watford) Ltd.

A number of cable firms are displaying examples of their products. Aluminium sheathed types of mass-impregnated non-draining cable are being shown by B.I.C.C., whilst Johnson and Phillips feature aluminium conductors by demonstrations of the technique of jointing. Examples of oil-filled and gas cushion cables for operation at voltages up to 132 kV are to be found displayed by the W. T. Henley's Telegraph Works Co.

Prominent in the rectifier display by the Westinghouse Brake and Signal Co. are selections from a new range of rectifier sets. Designed for operation on a single phase supply of 200/250 V of any frequency, they have d.c. outputs from 0·3 to 60 A at 145/190 V. The "Nevitron" single anode mercury arc rectifier is shown by the Nevelin Electric Co. in a 150 kW unit.

Rectifier equipment is prominent on Standard Telephones and Cables' stand, where are on view a range of their rectifiers for use in the operation of d.c. machines and appliances.

Industrial power units, in the form of electric motors, are found on Newman Industries' stand. These motors, conforming to the draft B.S.:C.N.E(ELE)6814, are shown in several sizes together with other types of motor manufactured by this company.

In exhibits devoted to electric vehicles may be seen "Morrison-Electricars," a feature of the Austin Crompton Parkinson Electric Vehicles Ltd. stand. One of these is the "P.90," one-ton vehicle of the flat deck type. Tomlinson (Electric Vehicles) have their "Universal Major" works truck on view.

Wiring and Accessories

Among the variety of domestic wiring accessories which are being displayed Little Accessories show their batten type weatherproof rubber couplers. Recently introduced to extend their range of couplers, these consist of a batten socket, with its rubber cap attached by a length of chain. Three varieties will shortly be available, in 15A size 3 and 4-pin models, and at 5 A rating, a 3-pin type. Also being displayed on this stand are examples of "Ashton" cables and "Ashathene" thermoplastic insulated cables, manufactured by Aeralite, Ltd.

Accessories introduced this year by New Day Electrical Accessories are being shown on their stand, including micro-limit switches with heavy mechanism. Rated from 1 to 15 A, a wide range of contact pressures are available. M. K. Electric feature socket outlets, both switched and unswitched, which incorporate their shutter and inter-lock mechanisms, together with a range of re-designed flush accessories, having radial-edged brass plates to avoid sharp edges and corners. Miniature circuit-breakers, which have recently been granted Certificates of Performance by I.S.T.A., are shown by Chilton Electric Products, Ltd., and new units, among which are seen multiplugs and clock connectors predominate in the Clang Ltd. exhibit.

Prepayment type watt-hour meters are prominent in exhibits of meters. On Smith Meters' stand these are being shown together with polyphase meters, incorporating maximum demand indicators, a new feature for this company. Also showing pre-payment meters are the Denis Ferranti Group, with their type "T.P.2" a.c. model, having mechanism to enable the rate per unit and coin in slot to be changed without fitting new parts.

A single phase, watt-hour credit meter is being introduced by Sangamo Weston in their model "S.29", form 1 unit. Among portable instruments being shown by Salford Electrical Instruments is a new a.c. load analysis model. This unit comprises an ammeter, voltmeter, wattmeter and p.f. meter in one case.

Insulating Materials

In the range of plastic materials Bakelite Ltd. are showing are seen their "Warerite" decorative laminates, incorporating diagrams for use as switchboard panelling. Also to be seen on this stand are laminated "Bakelite" materials based on glass fabric in several grades designed to maintain electrical stability at high temperatures. A highlight on the Tufnol Ltd. stand is a pipeline assembly fitted with a gasket, washers and spacers fabricated from "Tufnol."

Exhibits of their "Sindanyo" electrical insulating boards being displayed by Turner's Asbestos Cement Co. indicate the variety of uses to which this material may be put.

A novel feature of the J. & H. Walter stand is their new industrial Ozoniser. This unit, producing ozone from silent electric discharges, is designed in two sizes, and is aimed at keeping the air fresh or free from odour. For fire protection installations the Walter Kidde Co. show a new carbon dioxide release system. For industrial finishes applicable to the electrical industry, examples of "Solventless" impregnating varnishes and other materials are being displayed by Jenson and Nicholson.

Separate Exhibits

Although having a stand in the main exhibition, Siemens Electric Lamps and Supplies are concentrating their resources on a special exhibit in the Holy Trinity Church Memorial Hall, in co-operation with Benjamin Electric Ltd. and the Holophane Co. Siemens are demonstrating glass blowing and a working model of a cable armouring machine, among other items, whilst contributions from the other two organisations include demonstrations of scientific glassware by Holophane and of various manufacturing processes by Benjamin Electric. THE ELECTRICAL TIMES' stand may also be found at this exhibition.

PROBLEMS AND PRACTICE in Engineering

Unsolved Remedy

UNDER the above heading (May 21, 1953) your correspondent "J.W." describes trouble experienced with a hoist motor and the contactor panel. In answer to his invitation to submit a suggestion as to the probable cause, I should like to suggest that the trouble was caused not by the cables or panel but by the brake.

It seems to me that the troubles experienced would arise if the brake shoes did not clear from the brake drum at the instant of the contactors closing. This condition may, of course, be caused by the mechanical parts being out of correct adjustment or the brake solenoid acting sluggishly. Should the brake not clear instantly the condition would be that full voltage would be on the motor with its rotor locked, the current rush then being sustained around six to eight times full load current.

This theory seems to be supported by the fact that, without any fault being found or any adjustment being made, the motor began to work satisfactorily. This seems to indicate that either the brake shoes had by then become slightly worn and thus released some of the spring tension, or some parts of the brake mechanism had become freer in their action.

May I suggest that the fuses in the control circuit should be in the primary circuit of the voltage transformer. As shown in the diagram the primary winding is connected direct to the mains when the isolator is closed, without any protection being provided.—*R.A.*

WITH reference to the "Unsolved Remedy," as published in the ELECTRICAL TIMES of May 21, I would like to state that the fault appears to be due to a loose connection or connections in the solenoid brake circuit. Alternatively, the solenoid brake "burden" has not been removed from the motor shaft prior to the motor starting.

I have assumed that 15 amp fuses, at least, have been used during the previous tests mentioned in the publication. In conclusion, I would suggest that the solenoid brake coil be energised (temporarily) prior to the "press to lower or raise" being operated. I must point out that the hoist should not be loaded during this test.—*E. N. Alderton.*

THE note on the "Unsolved Remedy" by "J.W." (May 21, 1953), whilst giving a detailed account of the experience and a complete diagram of connections, does omit to give any information on two important points, viz.: the size of the h.r.c. fuse fitted and the time setting of the overload trip. The h.r.c. fuses are primarily for short circuit protection and have a fusing time as low as 0·0013 sec, and since a standard type of overcurrent trip acts at not less than 0·1 sec, a safe working margin of time discrimination is ensured.

The approximate full load current for a 4 h.p., 550 V s.c.r. motor is 4·5 amps and a suitable h.r.c. fuse would be 15/20 amps, a rating capable of carrying 40 amps up to 10 sec, which ensures that the fuse will not blow under normal starting conditions. If these conditions prevailed then a fault could be expected to have revealed itself after the many attempts made to start, but as this apparently was not so then the fuse size is suspect. In any case the repeated fitting of h.r.c. fuses is a costly method of rectifying faults.—*T. H. Snelson.*

Meter Stoppage

QUITE recently I was called to a small machine shop to ascertain the reason for a stopped meter. This was a single phase meter fitted in one line of the three-phase supply to a motor, which had star/delta starting.

Having satisfied myself that the meter had stopped, I replaced it with a spare I had brought with me and then started up the motor. Observing the meter, I saw its disc commence turning, only to stop suddenly—almost immediately—although the motor was running on load. On checking, the main fuses and consumer's fuses were found to be intact, and a test at consumer's main switch gave positive results. Opening the star/delta starter (which was rather an old make) I found in it three small fuses, of which one had blown. This, being in the same line as the meter, had caused it to stop, and on being replaced, the meter again functioned satisfactorily.—*F.L.*

Contributions to this page dealing with specific items of interest to electrical engineers and maintenance men are welcome, and, if accepted, will be paid for at our standard rates. Problems of a practical nature to which a solution is required will also be considered. Contributions should be written on one side of the paper only and may be accompanied by sketches, which will be re-drawn for publication.

A PROMISING OUTLOOK IN N.Z.

THE Auckland Electric Power Board is placing great stress on the inauguration in October next of the Maraetai hydro-electric scheme, judging from its report for the year ending March 31, 1952, a copy of which is to hand. For, during the year covered by the report, the Board was unable to keep within its power allocation from the State Hydro-Electric Department, despite restrictions, and, in fact, purchased 7·4% more units than it had been originally allocated.

The total number of units sold, at over 414 millions, was an increase of 12·7%, and with higher tariffs and the limiting effects of shortages of labour and material on the Board's maintenance programme, the activities for the year resulted in a surplus of £62,666. The Board is already issuing permits to electrical contractors to enable the wiring of additional appliances even though permission to use these appliances cannot be granted until the power station position improves. Obviously, a considerable expansion is expected this year, and there should be much development in 1954 when Maraetai is in full operation. But domestic consumption in the area is already noteworthy. Average consumption per domestic consumer during the year amounted to 1,482 units—an increase of 13·74%—and of the 74,348 domestic consumers a total of 46,491 have electric water heaters, that appliance accounting for an average of 2,809 units in the year. As a further indication of the Board's activities in this direction we should add that 3,084 water heating installations were installed during the year under review.

As we have previously recorded, the Board has adopted a policy of converting the existing overhead distribution network in the more densely populated areas to an underground system. But this is a long-term policy designed to provide gradual changeover within about twenty years.

Another point to which we earlier made reference, was the decision of the Board to remove the British Preference clause from its specifications. This action followed representation from an overseas tenderer, but the report adds that in future tenders will be accepted from manufacturers in all countries and will be considered on their merits, preference still being given to British firms, providing prices, etc., are comparable. Reference is also made to efforts to recruit labour from Britain.

Transformer Protection

THE use of Buchholz-type relays has been for many years the main line of defence against direct electrical breakdown in transformers. This type of relay relies for its operation on the gas pressure generated within the transformer if an arc, vaporising the oil, should occur. A new addition to this class of protective equipment was briefly described in the May issue of *Electrical Engineering*. Claims for this equipment, the sudden-pressure relay (S.P.R.), are its greater sensitivity and speed of operation.

Construction of Relay

It consists fundamentally of a pressure-sensitive system made up of a diaphragm and a single-pole, double-throw microswitch. It will operate on a pressure differential of about 0·33 lb/sq in. Operation of the relay is, however, governed by an equaliser which is a non-corrosive pipe-plug, with a small hole in it, forming an opening between the transformer gas space and the relay case. This restricts the relay response to a comparatively sudden change. By this system, a differential pressure is produced which is transient in nature but which, within limits, will operate the relay in a few cycles.

Test Results

As the operation of the relay does not depend on the static conditions, but more on the rate of rise of pressure above the normal, it is obviously of great use in the avoidance of serious transformer breakdowns. Sensitivity is given by the fact that the relay will respond to a rate of rise in pressure of $\frac{1}{4}$ lb per square inch per second, provided the total increase is at least $\frac{1}{4}$ lb/sq in.

Disturbances which produced rates of rise of 10 to 15 lb/sq in. per second caused the relay to open in 2 or 3 cycles; and for rates of 40 lb per sq in. per second the response is reduced to about 0·5 cycles. External disturbances will not operate the relay.

The completion of this relay design is claimed by the authors, Messrs. R. L. Bean and H. L. Cole of the Westinghouse Corporation to mark a most significant advance in the problem of the protection of large power transformers.

LIGHTING THE CITY

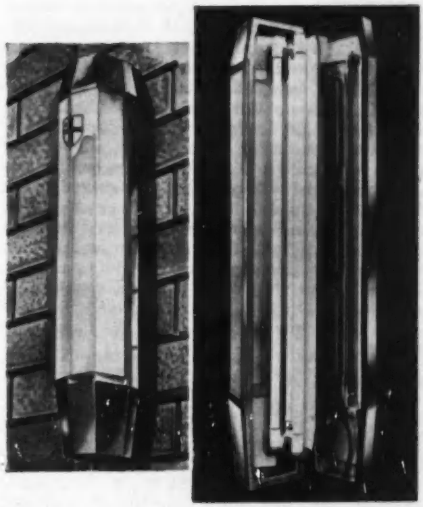
Vertical wall mounting fluorescent lanterns used in narrow streets

THE changing appearance of many of the country's town centres is a measure of the popularity of fluorescent street lighting, and in many cases the problem offered by narrow streets is overcome by mounting lanterns horizontally on walls of buildings facing the road. It is not, however, every façade which lends itself to this technique and, in an attempt to meet such difficulties in the City of London, the Siemens Electric Lamp and Supplies Co. have produced a lantern designed for vertical mounting. Installed in King Street, these lanterns were switched on last week by D. E. Erlebach, C.C., Chairman of the Worshipful the Streets Committee of the Corporation of London, and an indication of their appearance and quality may be obtained from illustrations reproduced on this page. The idea for this lantern came originally from the City Engineer of the Corporation of London, Mr. S. J. Forty, and the L.E.B. was responsible for the installation.

The Siemens' unit, appropriately named the "City of London" lantern, houses three 5 ft 80 W lamps. These are mounted on a plate fitted to the channel body, which also carries a tray holding all control equipment. At each end of the channel is fitted an interchangeable cast aluminium and plate, both of which, together with the "Perspex" cover, are hinged to facilitate access to the accessories. Space at the foot of the fitting is provided for time switch, fuses or relay.

Light control is effected by sealed-in prismatic refractors designed to provide not only adequate road brightness but sufficient illumination of pavements. Although designed primarily for mounting on sides of buildings, the lantern may be mounted on columns, singly or in pairs, back to back or in other ways where buildings are not available. Vertical fixing centres are varible to cater for diversity of site conditions, and stand-off brackets may be used to avoid projection from the wall. The control gear tray is removable to simplify erection of the shell.

Equipment provided with the fitting includes three combined choke and starting transformers for instant start operation, and p.f. correction capacitors either separately for each lamp, or in bulk. Quick release retractable lampholders are fitted for easy maintenance.



An artist's impression of the appearance of the lanterns with a view of the unit showing internal arrangement of components

This is a view of King Street showing the even illumination which is obtained

overseas news

Expansion in Alberta

A new 5,000 kW generator manufactured by C. A. Parsons and Co., Ltd., part of a large power-house expansion programme for Lethbridge, Alberta, was put into operation last month by Mr. A. L. H. Somerville, the city manager. The generator, which cost nearly $300,000 including installation, will not increase the capacity of the plant until steam can be supplied from the $400,000 boiler expected to be installed by the middle of next year. However, it will in the meantime relieve the load on plant now operating, and make possible an overhaul schedule for the other units. The generator, shipped from Newcastle-on-Tyne, arrived in Alberta last October. Its installation was supervised by a representative of C. A. Parsons of Canada, Ltd.

Opposition to Supply

The city of Prince Rupert, British Columbia, is to oppose the application of the British Columbia Power Co. to the Public Utility Commission for permission to install an additional generating unit in the city at a cost of $400,000. At a special meeting, the city council unanimously endorsed its opposition to the scheme after considering a report that the B.C. Power Commission would not make any recommendation on the matter. The power company has applied to the P.U.C. for approval to install a further diesel unit on the grounds that it wants to avoid a possible power shortage in the near future. The city is opposing the application on the grounds that the additional investment will add to the burden of taxpayers. The final decision rests with the Commission, after hearing both presentations. Because the city has asked the Power Commission to be the future supplier of electrical energy there by expropriating the holdings of the power company, the Commission was asked to take a stand on whether or not to oppose the application for more diesel installations. But this it has now declined to do.

Another Plant for Alberta?

The largest steam power project in Alberta, of 80,000 h.p., may be built at Lake Wabamum, 35 miles west of Edmonton, by Calgary Power, Ltd. For some time now the company has been studying the possibility of erecting a large steam plant near the north end of its system to meet the rapidly increasing demand in that area. In the Lake Wabamum region, it is pointed out, there is a huge coal deposit at or near the surface. The company already owns and operates eight hydro-electric generating stations with an aggregate installed capacity of 208,150 h.p., and has other developments in hand.

Trinidad's Expansion Programme

The Trinidad Government have now approved a scheme prepared by the Trinidad and Tobago Electricity Commission, which attempts to estimate additional generating plant required up to 1961. The first set required is a 10 MW turbo-alternator for the Port-of-Spain power station, which is now being ordered, we learn. The scheme also provides for the installation of a further 10 MW of plant at the Port-of-Spain power station and 20 MW of plant at the Penal generating station. Detailed estimates have been completed as far as 1957 showing that a further $10½ million will be required to meet this expenditure and the necessary transmission and distribution equipment to deal with the additional load. It is estimated that by 1957 the maximum demand will be over 30 MW and by 1961 about 50 MW.

Orders from America

A contract for six transformers for the McNary Dam on the Columbia River in Washington State has been placed with Ferranti Ltd., we learn. That company's tender of £306,000 was the lowest. The second-best was that of the English Electric Co., Ltd., of £320,000, while the lowest American tender, that of the Moloney Electric Co., was of £351,000. The contract has been placed by the United States Army Corps of Engineers.

In its revised tender for the supply of 10 transformers for the Chief Joseph dam on the Columbia River, the English Electric Co., Ltd., has again submitted the lowest bid at $442,751, (which is below its original figure) although it is stated that the efficiency rating is slightly below that of the lowest American offer. (This is part of the plant for which the tenders were eventually all rejected in April after much discussion.)

Another Atomic Plant

It is reported from Los Angeles that the North American Aviation Co. plans to build an experimental atomic power plant. As a first step, a $10 million pilot plant is to be constructed. This move follows President Eisenhower's recent suggestion that private industry should be encouraged to develop atomic power stations for normal use.

Yugoslav Project

From Belgrade it is reported that work has begun on the Koznjar hydro-electric plant in Metohija, south-west Serbia. This will produce some 42 million units annually, it is estimated, and will supply industrial plants in

Trepca. The Trepca mines are providing 300 million dinars for the construction of the plant.

Mechanical Engineers Needed

The possibility of establishing an atomic power station in South Africa—where uranium is obtained as a by-product of the gold-mining industry—was speculated upon by Mr. J. C. Fraser, general manager and chief engineer to the City of Johannesburg Electricity Department, in his presidential address at the annual convention of the Association of Municipal Electricity Undertakings of South Africa recently. He estimated that all costs of constructing the station, extracting uranium and setting up of the operating reactor, should not exceed £100 per kW developed, but so far the lowest figure quoted for such operations was £9,200 per kW, indicating that there was still much leeway to make up. Earlier, at the convention, Mr. J. E. Mitchell, city electrical engineer of Salisbury, Southern Rhodesia, had delivered a paper on "Centralised Injection Ripple Control of Water Heaters and Street Lighting" and Mr. G. Pulik, of the Johannesburg undertaking, had read his paper on the construction of tariffs. In the valedictory address of the retiring president, Mr. A. R. Sibson, city electrical engineer of Bulawayo, spoke of the growing paucity of qualified and experienced mechanical engineers in generating stations. Engineers joining supply undertakings were nearly always electrical engineers with a penchant for transmission, distribution or light current work, and apprentices very rarely expressed a preference for generation as a career, he maintained. The greatest difficulty was experienced in providing operational staff for power stations. This was a situation that had to be rectified very soon, for in many cases it was only the old hands who were now holding the fort, he warned.

Power Expansion

Power from the southern Gujerat grid station at Uttran will be supplied to Navsari, Billmora and Bulsar by the end of this year, when the 40-mile-long transmission line between Surat and Bulsar will be ready, according to Mr. Dave, executive engineer in charge of the station. At present the station was supplying about 4,000 kW power to Surat and adjoining areas, he said. The installed capacity is now 15,000 kW, but work on another 7,500 kW unit has begun and is expected to be completed by the end of next year.

Order Defied

Ordered by the Queensland Government to increase its stockpile of coal to, and maintain it at, not less than 45,000 tons, the Brisbane City Council has decided to defy the directive which was issued in a Gazette order. At the same time the Southern Electric Authority was ordered to provide a stockpile of at least 50,000 tons of coal. The City Council's objection is based partly on price (some coal offered would cost £5 15s. a ton compared with the average West Moreton coal price of £3 13s), and the fact that it would be necessary to start a new stockpile at Tennyson because of insufficient room at New Farm. This would entail double handling, with consequent increased costs.

Hopes in Queensland

The new generating station at Townsville, Queensland, is to be officially opened on July 4 next, Mr. Neil Smith, the State Electricity Commissioner, has announced. Last week also saw the inauguration of transmission lines linking Gladstone to Rockhampton, and these two projects should bring a reduction of electricity costs, he said. Last September the Commission put into operation a new steam station at Rockhampton, and another similar station has recently been completed at Howard, and in both cases tariffs were reduced when the new plant was started up.

Right to Supply

A demand by the Wollongong City Council, New South Wales, that it should be permitted to supply bulk power to all industries in the Wollongong-Port Kembla area, has been criticised by the N.S.W. Chamber of Manufacturers. The N.S.W. Electricity Commission at present supplies in bulk to a few of the larger industries in the area, and the Chamber of Manufacturers consider that it should be the State's policy that manufacturers should have the right to purchase electric power direct from the generating authority.

Power and Heavy Water Scheme

The New Zealand Government has approved in principle the construction of a combined plant to produce electricity and heavy water, Mr. W. S. Goosman, the Minister of Works, has announced. Cost of the project is estimated at £5 million. Mr. Goosman said electricity and heavy water would be produced by utilising geothermal steam in the Wairakei area of North Island, where drilling has been going on for some time. Special equipment is to be erected which will subject the natural steam to a process of multiple distillation. From this a small but steady quantity of heavy water can be realised. After distillation the steam can be used for power generation. We have already reported that there are hopes of erecting a power plant of about 20,000 kW in the area.

Development Loan

A £20 million national development loan is to be launched by the New Zealand Government on June 26, it is announced. The loan is to meet the Government's selected works programme providing, *inter alia*, for hydro-electric schemes and improved transport facilities. Locally it is believed that the latter may include electrification of part of the North Island main trunk railway as well as Auckland City's suburban rail services.

CORONATION HONOURS LIST

ELECTRICAL INDUSTRY WELL REPRESENTED

THE 'sparkling' Coronation Honours List issued on Monday last, contains names of personalities in every walk of life. Among these are many having notable associations with the Electrical Industry. Two newly created barons are **Sir Peter Bennett,** O.B.E., J.P., who was until recently chairman and joint managing director of Joseph Lucas Ltd., and **Sir Ralph Glyn,** BT., M.C., chairman of the Skefko Ball Bearing Co. A Baronetcy has been conferred upon **Sir Herbert Williams,** M.P., M.SC., who is vice-chairman of Bennis Combustion Ltd., and earlier was a director of a number of electricity supply companies. A Knighthood has been conferred upon **Dr. E. C. Bullard,** director of the National Physical Laboratory.

The Companion of Honour goes to the **Rt. Hon. Thomas Johnston,** who apart from being chairman of the North of Scotland Hydro-Electric Board since its formation, is also widely known for his valuable work in connection with other developments for Scotland, and to the **Rt. Hon. J. Chuter Ede,** M.P., J.P., who was for a time chairman of the former London and Home Counties Joint Electricity Authority, and **Sir John Cockcroft,** director of the Atomic Energy Research Establishment becomes a Knight Commander of the Order of the Bath. Among those who receive the C.B.E. are **Mr. Alfred Agar,** chairman and managing director of Davidson and Co., Ltd.; **Mr. E. B. Ball,** managing director of Glenfield and Kennedy Ltd.; **Mr. F. S. Barton,** M.A., B.SC., M.I.E.E., principal director of Electronic Research and Development, Ministry of Supply; **Mr. Thomas Lawrie,** general manager of the North of Scotland Hydro-Electric Board; **Col. B. H. Leeson,** O.B.E., T.D., M.I.E.E., director of the British Electrical and Allied Manufacturers' Association; **Mr. F. C. McLean,** M.B.E., B.SC., M.I.E.E., deputy chief engineer of the B.B.C.; **Mr. A. M. Mooney,** M.I.E.E., deputy director of Electrical Engineering, Admiralty; **Mr. Henry Nimmo,** M.INST.C.E., M.I.E.E., M.I.MECH.E., chairman of the Southern Electricity Board. **Mr. J. Rawlinson,** chief engineer of the London County Council.

Mr. H. Nimmo

Col. B. H. Leeson

and **Mr. M. C. Tozer,** assistant secretary, Ministry of Fuel and Power. An overseas recipient of the C.B.E. is **Mr. R. H. Lea,** general manager of the Electricity Trust of South Australia.

Awards of the O.B.E., are conferred upon **Mr. J. G. Bullen,** general manager, Highland Reduction Works, British Aluminium Co., **Mr. F. C. Fenton,** chief commercial officer to the London

Mr. P. Morrell

Rt. Hon. T. Johnston

Electricity Board; **Mr. W. H. Grinsted,** M.B.E., chief engineer, Siemens Brothers and Co. Ltd., **Mr. W. H. M. Jackson,** employers' secretary of the National Joint Industrial Council for the Electric Cable Making Industry; **Mr. J. C. Needham,** chairman of Evershed and Vignoles Ltd., **Mr. E. L. E. Pawley,** M.I.E.E., head of Engineering Services Group of the B.B.C., **Mr. W. R. Piggott,** principal scientific officer, Radio Research station, D.S.I.R., the **Rt. Hon. Dowager Lady Swaythling,** president of the Electrical Association for Women, **Mr. H. J. Wassell,** chief radar development engineer to Marconi's Wireless Telegraph Co. Ltd.; **Mr. J. T. Graham,** assistant managing director of Worthington-Simpson Ltd. and **Mr. S. R. Campion,** principal information officer, G.P.O. An overseas recipient of the O.B.E. is **Mr. J. M. Morris,** M.B.E., A.M.I.E.E., chief electrical and mechanical engineer of Basra Port, Iraq.

Those who received the M.B.E. include **Mr. A. Anslow,** production manager, Joseph Sankey and Sons Ltd.; **Mr. E. B. Babler,** chief of metallurgic and general research laboratory of Allen West and Co. Ltd.; **Mr. W. F. Brooks,** production superintendent of Alfred Graham and Co. Ltd.; **Mr. W. J. Hobbs,** works manager, Drayton Regulator and Instrument Co. Ltd.; **Mr. T. C. Hunter,** distribution engineer, Fife sub-area, South East Scotland Electricity Board; **Mr. G. King,** senior research chemist, Albright and Wilson, Ltd.; **Mr. H. F. Knell,** J.P., M.I.E.E., manager of Kent sub-area, South Eastern Electricity Board (this award is for services during the recent floods), **Mr. R. T. Lakin,** A.M.I.E.E., chief engineer, Whiteley

continued on page 1062

PERSONALITIES

IN THE INDUSTRY

Deputy chairman of the North Western Electricity Board, **Mr. R. Alan S. Thwaites,** B.SC.(ENG.), M.INST.C.E., M.I.MECH.E., M.I.E.E., has announced his intention of retiring on July 30 next. He joined the staff of the Yorkshire Electric Power Co. in 1922, after having been on the manufacturing side of the electrical industry for 13 years with W. H. Allen and Sons, Ltd. He remained with the Y.E.P. Co. as power sales engineer until 1935 when he joined the North Wales Power Co. as development and sales manager and was appointed chief engineer and manager to the company in 1939, in succession to Mr. G. K. Paton. In 1941 he joined the Manchester Corporation Electricity Department, succeeding the late Mr. J. Harcourt Williams as deputy chief engineer, and in 1944 was appointed chief engineer and manager in succession to Mr. H. C. Lamb, which position he retained until vesting date. Mr. Thwaites has also been chairman of the council of E.D.A., and chairman of the North Western centre and a member of the council of the I.E.E. His address from next September will be "Frankfield," Spinfield Lane, Marlow, Bucks. We understand that he will still take an active interest in the electrical industry, but mainly on the manufacturing side.

Mr. R. A. S. Thwaites

Mr. J. H. Jones, has been appointed by Frigidaire Division of General Motors Ltd., to act as liaison officer with the Electricity Boards. He has had fifteen years experience in the Electric Supply Industry serving originally with the County of London Electric Supply Co. Ltd. and latterly with the South-Western Sub-Area of the London Electricity Board.

Mr. J. H. Jones

Previously generation engineer (operation) **Mr. W. Simpson,** ASSOC.I.E.E., M.INST.F., has been promoted to the position of chief generation engineer (operation) to the South West Scotland Division of the B.E.A. He succeeds Mr. W. McFarlane who recently retired. Mr. Simpson served an apprenticeship with D. Stewart and Co., of Glasgow, and then joined the Clyde Valley Electrical Power Co. in 1914 as junior switchboard attendant at Motherwell power station. He was for over 20 years, station superintendent at Clyde's Mill, until 1947, when he became superintendent of the company's power stations. With the reorganisation of the supply industry in 1948 he became generation engineer (operation) with the South West Scotland Division.

Overseas manager since 1946 of the Parnall (Yate), Ltd., group of companies, **Mr. G. H. M. Rosam** has been elected chairman of the Institute of Packaging for the ensuing year.

Sir William Stanier, F.R.S., has accepted an invitation to join the board of Brynmawr Rubber, Ltd.

The Marconi International Marine Communication Co., Ltd., has appointed **Mr. G. J. McDonald,** B.SC.(HONS.), A.M.I.E.E., as technical manager to the company in succession to the late Mr. F. P. Best. Mr. McDonald was previously deputy technical manager. He gained experience with various firms before joining, in 1935, Marconi's Wireless Telegraph Co., Ltd., with which he was engaged on research and development work, mainly on direction-finding technique. Later he worked under Mr. Best who was in charge of the development of marine radio equipment. He transferred to the Marconi Marine Co. as deputy technical manager in 1949.

Mr. G. J. McDonald

Mr. J. Frankenburg, deputy-chairman and a managing director of Greengate and Irwell Rubber Co., has been elected chairman in succession to **Mr. W. G. Morris,** who, on medical advice, is retiring from active business life after more than 50 years' service with the company. His services, however, will still be at the disposal of the Board. **Mr. D. D. Marshall,** a managing director, succeeds Mr. Frankenburg as deputy-chairman.

Mr. John Elliot, M.INST.T., chairman of the Railways Executive, has been elected President of the Institute of Transport, and he will assume that office on October 1 next.

The Steel Company of Wales, Ltd., announce that **Mr. R. T. Jenkins** has been appointed manager of the central engineering shop of the Steel Division of the company, in place of **Mr. Andrew Henderson** who has been appointed superintendent of maintenance shops.

D

Mr. W. A. Rigby has been appointed Northern Divisional sales manager, Industrial Products Department, of Hoover Ltd., with headquarters in Manchester, while **Mr. A. R. H. Barton** is now Southern Divisional sales manager with headquarters at Perivale. Mr. Rigby has spent all his civilian life in electrical engineering. He joined Hoover's in 1948 and in 1949 became a sales engineer with the Industrial Products Department. Mr. Barton, who joined the company as a sales engineer in 1950, was acting sales manager, Southern Division, until his present appointment.

Now in this country on a combined business and holiday visit is **Mr. R. H. Saunders,** chairman of the Hydro-Electric Power Commission of Ontario. Subsequently he intends to visit Germany, we understand, before returning to Canada later this month.

Lord Reith has been elected a director of Tube Investments, Ltd.

Relinquishing his position as managing director of the Igranic Electric Co. at the end of June, **Mr. R. K. Fleming,** M.I.E.E., F.R.M.S., has been appointed chairman in succession to **Mr. G. R. Thursfield,** M.I.Mech.E. Mr. Fleming served an apprenticeship in mechanical engineering with D. and J. Tullis Ltd., and was later with James Howden and Co., Ltd. Subsequently he gained a wide general experience in mechanical and electrical engineering and later became chief engineer at Lockburn Ironworks, Glasgow. He then joined the Harland Engineering Co. as superintendent engineer for Scotland, and in 1924 joined the Igranic Electric Co., where after a period at the works he was appointed manager for Scotland and was located at Glasgow. Later he was transferred to the head office in London, and in 1937 became general works manager at Bedford works, and was appointed a director in 1940. He is a founder member of the British Institute of Management.

Mr. R. K. Fleming

Elliott Brothers (London) announce that **Mr. Charles Marcus,** a vice-president of Bendix Aviation Corporation, Mr. J. G. Beevor and Mr. E. O'Hanrahan have been appointed to the Board.

Dr. J. M. Cowan, senior principal scientific officer at the Royal Botanic Garden, Edinburgh, has been appointed chairman of the Hydro-Electric Amenity Committee—set up under the Hydro-Electric Development (Scotland) Act—in succession to the late Sir Frank Mears.

After nearly 25 years service on the Brighton Town Council, **Ald. J. E. Hay,** who has been in business for many years as an electrical contractor in the town, has been installed as Mayor.

Mr. A. Wadsworth

Mr. F. Shaw

Manager of the Glasgow sales office of Brook Motors Ltd. since 1928, **Mr. C. W. Scatcherd** retired for health reasons at the end of May. His successor is **Mr. A. Wadsworth** who has been manager of the firm's Plymouth office since it was opened in 1947 and before that was on the staff of the Bristol office. The company also announce that **Mr. J. D. Bailey,** for the past six years assistant sales engineer at the Birmingham office, has been appointed manager at Plymouth, and he will be replaced at Birmingham by **Mr. F. Shaw** from the Huddersfield sales staff.

The Dubilier Condenser Co. (1925), Ltd., announce that **Mr. A. E. Bennett** has been appointed chief engineer in charge of the laboratory, under the direction of the technical director, Mr. P. R. Coursey, B.Sc., M.I.E.E., and will be responsible for all work connected with design and development of the company's products. In addition, **Mr. H. Andrewes,** O.B.E., B.Sc., A.C.G.I., M.I.E.E., has been appointed technical sales executive, in which capacity he will be in charge of and responsible for the sale of the company's products coming under that heading, including suppression devices.

OBITUARY

Mr. W. A. Gillott, joint managing director of Gillott Electro Steam Cookers, Ltd., died on May 26, aged 67. He was very well known in the electric supply and cooker industry in which he had worked for fifty years.

Mr. A. W. Hall, who died on May 22, aged 60, was one of the band of engineers who assisted Mr. C. S. Franklin in developing the Marconi short wave beam system for world radio communication in the 1920's.

Mr. A. E. N. Taylor, B.Sc., A.M.Inst.C.E., a deputy chief engineer at the Ministry of Transport, died on May 25, aged 54. At the Ministry he had been concerned with street lighting, traffic control signals, and the design and construction of motor-vehicles.

Mr. T. W. Merry, resident station engineer to St. Pancras Borough Council Electricity Department from 1927 until retiring in October, 1940, died on May 26, aged 76. He joined that undertaking in 1903 as station superintendent.

NEW LITERATURE

Photometry

by J. W. T. Walsh, O.B.E., D.SC., M.I.E.E.

THE science of photometry has advanced in great strides during the past quarter century, and this book, one of the most important works on the subject, has now been brought completely up-to-date. The original volume, first issued in 1926, rapidly gained the reputation of authority, but during the subsequent twenty-seven years the use of electronic measurements has developed to such an extent that practically every measurement function carried out uses some electronic intermediary. During the same period, the system of calorimetry has been standardised, a primary standard of light established and progress made toward international agreement on terminology. All these developments have been included in this volume which will undoubtedly retain its pre-eminence in the field of lighting and light measurement. Published by Constable, 544 pages, 6 in. by 9¼ in. Price 63s.

Transmission Lines and A.C. Networks

by T. F. Wall, D.SC., D.ENG., M.I.E.E.

THE problem of the calculation of fault currents and load flows in large interconnected networks, is not amenable to ordinary mathematical treatment (except with great computational labour) and for that reason the network analyser has been developed. There are, however, numerous small networks where fundamental principles can be usefully applied, and it is mainly in this field that Dr. Wall's book will prove most valuable. It has, moreover, the great merit of keeping firmly to its subject and is thus of particular use to the practical man. The subjects covered include such items as the design of overhead lines, symmetrical component analysis, transformers, cables, protection, short circuits and surges, voltage drop computations and voltage regulation. Published by George Newnes, Ltd., 328 pages, 5½ in. by 8½ in. Price 30s.

Dynasty of Ironfounders

by A. Raistrick, PH.D., M.SC.

TWO hundred and fifty years of technical production in a basic industry such as iron founding has about it a touch of romance that makes a good story. In this volume Dr. Raistrick has interwoven a fascinating account of the Coalbrookdale Company over such a period into a background of industrial history. The Company played an important part in many of the developments which advanced engineering technology so rapidly in the eighteenth and nineteenth centuries. Here that work is set out from the point of view of the personalities concerned, and the resulting study is certain to interest any modern engineer whose way it comes. Published by Longmans, Green, 308 pages, 8¼ in. by 5¼ in. Price 30s.

Applied Electricity

by H. Cotton, M.B.E., D.SC., M.I.E.E.

A SECOND edition of this work, appearing only a year or so after the first, indicates that an outstanding textbook has had a well deserved reception. To summarise the facts which an earlier review treated at greater length, in this volume Professor Cotton succinctly covers the syllabus of the University of London B.Sc. (Eng.), Part 1 subject, Applied Electricity. Incidentally, of course, he provides for the needs of students preparing for many similar examinations.

For this second edition, apart from a general tidying up, there has been added a longer treatment of the M.K.S. system. The work on electronics has been extended, and a valuable summary of the principles of circle diagrams has been incorporated as a separate chapter. Published by Cleaver Hume, 482 pages, 8½ in. by 5½ in. Price 18s. 6d.

BOOKS RECEIVED

Welding Technology, by F. Koenigsberger. Textbook for the welding engineer engaged on production work. Published by Cleaver-Hume, 341 pages, 8½ in. by 5½ in. 2nd ed. price 25s.

Metadyne Statics, by J. M. Pestarini. Extensive discussion of the static aspects of metadynes and similar machines. Published by Chapman and Hall, 415 pages, 9 in. by 5¾ in. Price 72s.

The Design of Electronic Measuring Instruments, by F. G. Spreadbury. Brief textbook covering more common instruments. Published by the Association of Engineering and Shipbuilding Draughtsmen, 102 pages, 8¼ in. by 5½ in. Price 4s.

Generation, Transmission and Utilisation of Electric Power, by A. T. Starr. New edition of degree standard textbook. Published by Pitman, 517 pages, 8½ in. by 5½ in. Third edition, price 20s.

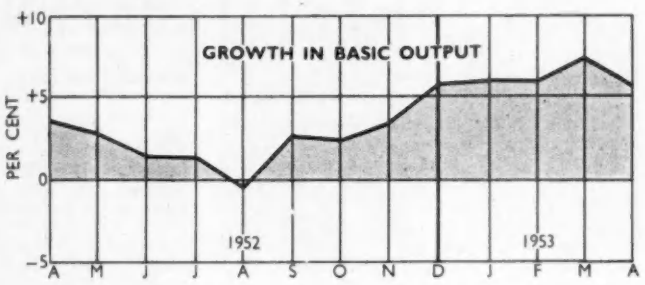
Illumination Engineering, by W. B. Boost. Theatrical treatment without reference to individual designs of lamp. Published by McGraw-Hill, 340 pages, 9 in. by 6 in. Second edition, price 59s. 6d.

Ionospheric Recording, Radio Research Special Report No. 23 discusses in general terms results of observations of ionosphere by Radio Research Station from 1930 to 1946. Published for D.S.I.R. by H.M.S.O. Price 1s. 6d. (by post, 1s. 7½d.).

Permanent Magnets, compiled by members of the Permanent Magnet Association. Outline of permanent magnet practice on a general interest basis. Published by Permanent Magnet Association, 301 Glossop Road, Sheffield 10, 59 pages, size 10 in. by 7 in. Price 10s.

BASIC LOAD GROWTH

In the accompanying curve is shown how energy sold by the B.E.A. in the past 12 months compares with that of the corresponding month a year earlier. Figures used for plotting are first corrected for the effects of temperature and of the number of working days included in the calendar month. Thus the points marked are an approximate measure of the basic rate of load growth experienced by the B.E.A.

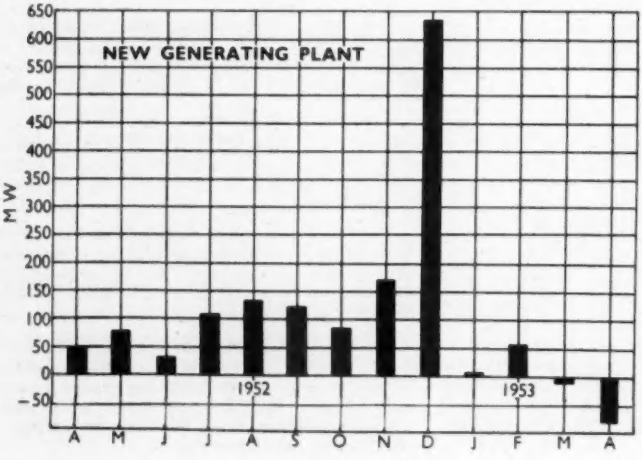


Power Supply in April

COMPARATIVELY little new plant was commissioned by the B.E.A. in April. Two boilers only were recorded, both in new stations, that in Barking "C" being its first boiler to be commissioned. Of Babcock and Wilcox manufacture, this unit is 405 klb/hr rating at the standard turbine stop valve conditions of 900 lb/sq in., 900° F. Together with other units of 540 and 405 klb/hr capacity, this will be supplying steam to 75 MW B.T.H. sets of which one has so far been commissioned.

The other boiler is by International Combustion for Skelton Grange, and brings the total at this station to six. It is a 360 klb/hr unit, to operate at t.s.v. conditions of 900 lb/sq in., 925° F for 60 MW Parsons 3-cylinder sets. Present plans provide for six boilers of this rating and there are to be three 550 klb/hr units. Boiler steam conditions are 975 lb/sq in. at 940° F.

In the graph showing Electricity Board Sales for this month, percentages for the North of Scotland H.E. Board are based on somewhat different figures than those used previously. It has been the practice to base percentages on the total sales of this board, which include sales to the B.E.A. Their inclusion tends to overshadow sales by the H.E. Board to its own areas and as sales to the B.E.A. can vary widely due to fluctuating water conditions, the overall picture may fail to present fairly the Board's increasing sales to its own consumers. From this month onwards, monthly and cumulative percentages will therefore be based upon the North of Scotland H.E. Board's sales to its own consumers.

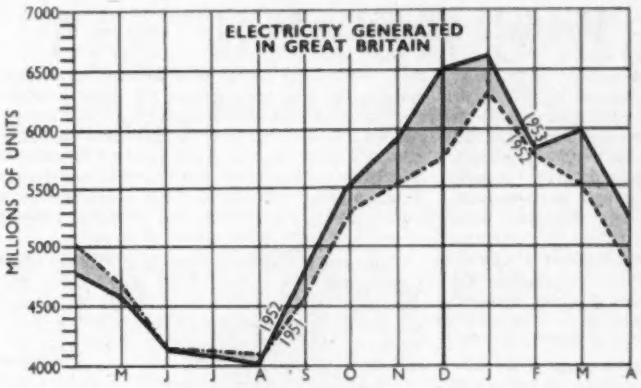


GENERATING PLANT

At the end of April, 1953, the installed capacity of the B.E.A. was 17,151 MW, showing a decrease of 78 MW during the month. During the same period that of the North of Scotland H.E. Board also fell, by 1 MW, and at the end of April it stood at 558 MW.

The overall increase during the past twelve months is 1,245 MW or 7·6% of the total at April 30, 1952.

The total installed capacity used for the purposes of this graph is the total m.c.r. of all generating sets which are connected on both steam (if appropriate) and electric sides and are suitable for service.



UNITS GENERATED

Total generation during April amounted to 5,269 million units in stations under the control of the British Electricity Authority and the North of Scotland Hydro-Electric Board. Last year's corresponding figure was 4,775 million units.

Of April's total, 5,180 million units were generated in steam stations, whilst the contribution from hydro-electric stations was 77 million units.

Energy sent out by both Authorities during the month totalled 4,958 million units, 94·1% of that generated.

Sales by all Area Boards last month were higher than in April last year, and as this is the first month in the 1953-54 financial year the cumulative figures are the same as for the month. Most of the higher increases (over 10%) are shown by Boards serving mainly non-industrial consumers, which may be explained by colder weather this year. Moreover, the number of working days was, in both years, identical, so that industrial consumers would not require increased energy on this account. In addition the overall higher sales are in themselves the recovery from the low level of last year's values, which was shown by the fall in basic load growth at that time. For April the basic load growth was reduced to 5·5%, a figure somewhat lower than that in the last two or three months.

It will be seen from the diagram of generating plant that April is the second month in which there has been a reduction in the installed capacity of the two authorities. At this time of the year, however, rating of generating plant is revised, usually resulting in a reduction in the total, and combined with sets taken out of commission, this re-rating accounts for the 79 MW decrease.

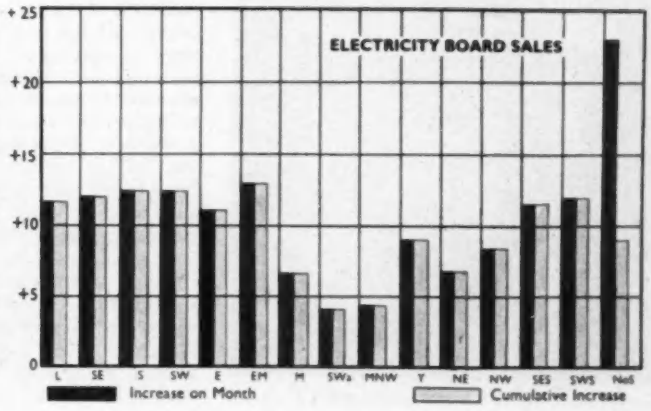
B.E.A. SALES TO AREA BOARDS IN APRIL

Board	Apr. total in million units	% inc. or dec. on Apr. 1952
London	457·1	+11·7
South Eastern ...	270·6	+12·0
Southern	313·8	+12·4
South Western ...	153·0	+12·4
Eastern	433·6	+11·1
East Midlands ...	372·3	+12·9
Midlands	494·6	+6·6
South Wales	270·7	+4·1
Merseyside and N.W.	276·4	+4·4
Yorkshire	482·7	+9·1
North Eastern ...	294·1	+6·8
North Western ...	536·1	+8·4
South East Scotland...	106·6	+11·6
South West Scotland...	254·4	+12·0
Direct sales by B.E.A.	77·7	+35·1
Grand Total ...	4,793·7	+9·8

APRIL SALES

Progress in the sales of energy by the British Electricity Area Boards and by the North of Scotland H.E. Board are represented in this diagram. For each entry the two columns indicate, respectively: the bulk supply of electricity taken by the Board (or the total sent out to Areas for the North of Scotland) in April, 1953, expressed as a percentage increase on that in April, 1952; and at the same comparison for cumulative totals based on the financial year.

It should be noted that the B.E.A. financial year runs from April 1, whilst that of the North of Scotland H.E. Board corresponds to the calendar year.



British Standards

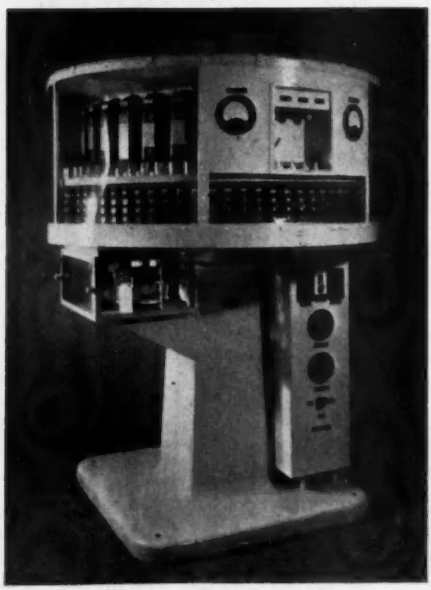
Presentation of Numerical Values. *B.S.* 1957: 1953. *Price* 3*s. net*. The purpose of this is to promote the adoption of a consistent procedure in the presentation and interpretation of numerical values particularly with regard to the number of figures to be used and the procedure for "rounding". The general principles and working rules of this subject are set out and illustrated with examples. A conventional method for estimates of accuracy is recommended, but a detailed discussion on the meaning of the term accuracy and the conventions for expressing it is not regarded as within the scope of the standard which does not deal with statistical aspects of numerical data.

Bulbs for Miners' Electric Lamps. *B.S.* 535: 1953. *Price* 3*s. net*. Modern types of bulbs and recent developments in the field of portable mine lighting equipment have been taken into account in this revision of the 1938 issue of B.S. 535. In view of the modern practice of using krypton-filled bulbs, the specification applies only to this type of bulb, but should demand arise, argon-filled bulbs may be covered later. The testing specification has been altered to accept a much shorter life to achieve the higher lumen efficiency. As the 2-volt lamp is now little used, the new standard provides only for 2·5, 3·6, 3·75 and 4·0 volt bulbs. It also gives detailed requirements for lamp bulbs for use in miners' safety lamps, lays down sampling procedure and includes method of test and grounds for rejection.

Copper for Electrical Purposes (Tubes, High Conductivity). *B.S.* 1977: 1953. *Price* 2*s.* 6*d. net*. This is the fourth in a series of standards for copper for electrical purposes. The others, B.S. 1432, 1433 and 1434, deal with sheet and strip, bar and rod and commutator bars, respectively. It lays down the requirements of copper tubes only and does not apply to cable sockets or conduit for electric wiring. Provision is made within the standard whereby the purchaser can by special arrangement specify that tubes shall be made from oxygen-free high-conductivity copper complying with B.S. 1861 recently published.

Testing Glow Switches

FURTHER details have now been received about the remarkable machine for testing glow switches, shown on the stand of Thorn Electrical Industries, Ltd., at the A.S.E.E. Exhibition. This machine which tests 72 switches in approximately eight minutes, comprises a circular turret system whereby each switch is connected successively to a series of dummy circuits in which each switch is operated some hundreds of times under conditions similar to that of actual use. An incidental factor is that this process provides an "ageing" function which contributes much to the consistency of operation in service. At two points in the circuit, each switch is tested for minimum and maximum glow voltages and the result of the test is summated in an ingenious electronic device. At the end of the test period these results are set up on a mechanism beneath the table on the left of the operator, and are stored up until the appropriate glow switch appears in the opening, when they are exhibited by one of three lamps lighting at the top of the opening. All the operator has to do is to remove those which have passed the test and to segregate the few which have failed due to the starting voltage falling outside the limits set.



The Thorn glow switch tester

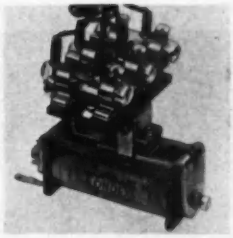
The settings for the tests are adjusted by two "Variac" controls on the panel to the right of the operator, the meters to the right and left of the loading aperture indicating the settings. A third control is included to vary the dummy loading to simulate conditions for different sizes of fluorescent lamp.

The BUYER'S *Column*

Sensitive Mercury Switch Relays

PRODUCED as a sensitive relay which will operate very heavy duty contacts, the KR/QA relay is the latest addition to the range supplied by LONDEX, LTD., Anerley Works, 207 Anerley Road, London, S.E.20.

It is a development of two well-tried and tested Londex designs, i.e. the coil and magnetic chassis are identical with those used in the KR relay whilst the switches are the same as used in the type LQA relay. The tilting mechanism has been so designed that it combines simplicity of construction with reliable sensitive operation.



A KR/QA relay

This use of mercury tubes not only increases the switching capacity of the relay but also widens its scope of application because this type of enclosed contact permits safe operation in dangerous dustladen or corrosive atmospheres.

Suitable for operating on d.c. systems, the relay is available with a wide range of windings up to 20,000 ohms resistance. Power required for reliable operation varies from 0·25 to 1·0 watts, depending on number and size of the mercury switches. Continuous rating is 3-4 watts.

Either three 6 amp or 10 amp mercury switches or two 20 amp mercury switches can be fitted, the first is for 250 V a.c., but the others having porcelain anti-tracking linings are suitable for use on d.c. and 500 V a.c. supplies.

Central Sanitary Incinerator

THE success of the G.E.C. sanitary incinerator for personal use has prompted the GENERAL ELECTRIC CO., LTD., of Magnet House, Kingsway, W.C.2, to produce a larger unit for use centrally in buildings having oil-fired boilers or other heating systems that preclude burning of refuse.

The external dimensions of the new incinerator are 18 in × 20 in × 36 in high. Its rating is 6 kW and it is arranged for direct connection to the mains. A heat-resisting lining and thermal insulation are provided. The double charging lid, fitted at the top of the unit, measures 8 in × 10 in, and has an internal spring seal.

Temperature is controlled by means of a process timer which allows settings of up to one hour; this period being found adequate for all purposes of drying and ignition. A hand-operated rocker hearth is fitted and there is a withdrawable ash drawer at the bottom.

Coolicon Prices Reduced

AS from June 1 the prices of standard plastic "Coolicon" shades will be reduced by the makers, THE BENJAMIN ELECTRIC CO., LTD., Brantwood Road, Tottenham, N.17, as follows: 9 in. diameter from 5s. 8d. down to 4s. 8d. plus tax; 11 in. diameter from 6s. 8d. each down to 5s. 4d. each plus tax.

This reduction applies to the full standard plastic range with the exception of the new Nursery Coolicon which remains at 9s. 6d. including tax.

New Thermovent Models

FOREMOST of new designs in the "Thermovent" convector heater range marketed by E. K. COLE, LTD., Southend-on-Sea, Essex, in readiness for the forthcoming autumn, just released, are the "FR" and "SR" series.

First major change in design of the floor-standing models, the new series whilst retaining the basic principles of the older models include a number of new features. Larger and more efficient duct systems provide a greater circulation of air through the heater and lower grille temperatures.

Models are now available with either switch or automatic heat control by thermostat operating in its own air duct so that it rapidly responds to changes in room temperature. These new models have a 40 W lamp giving a warm luminous effect.

"FR" models have an elegant walnut plastic front panel with an "easy clean" metal grille in durable old gold enamel. A small red pilot light is included to indicate operation of the thermostat. "SR" models are housed in steel cases finished in glossy light bronze stoved enamel steel cases and are provided with fixing holes for possible wall mounting.

The "FR" models are available in 1 kW and 2 kW models and are 23 in high × 9½ in deep and 16½ in or 25½ in wide, and the "SR" models in 1 kW, 2 and 3 kW models, dimensions 23 in high × 8¾ in deep × 15½ in or 24½ in wide.

The FRC2 "Thermovent" has a walnut plastic front

Philips Release Tape Recorder

THE ELA Department of PHILIPS ELECTRICAL LTD., Century House, Shaftesbury Avenue, W.C.2, have announced the release on the British market of a new magnetic tape recorder—type EL.3530, a portable twin-track model, at £77 10s. For operation on a.c. mains, 50 c/s, 110 and 245 V supplies, the recorder weighs 32 lb and its case is covered in washable plastic.

The twin-track recording of this new model is for a tape velocity of 3¾ in per second, giving it a tape consumption which is one-fourth of that of single-track recorders with a tape velocity of 7½ in. per sec. Tape length is 600 ft on a 5 in. diameter reel, affording a recording or play-back time of one hour.

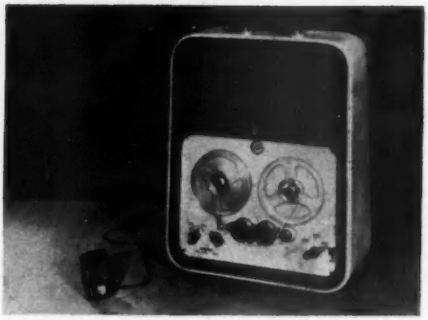
The equipment has two heads, the erasing and the combined recording/play-back head which is demagnetised on change-over, helping to eliminate noise. During recording, the erasing head erases any previous recording still on the tape.

The play-back amplifier has an output of 2·5 watts. There are output sockets, in addition to the built-in speaker, for connection to an extension loudspeaker and to headphones for monitoring purposes. An output is provided on the recorder to enable recordings to be transmitted over lines to an existing amplifying system.

The recorder is supplied with a crystal microphone equipped with a table stand and 1½ yards of cable.

Telephone conversations can be recorded by the use of the EL.3970 Telephone Coil. This coil is put under the telephone and connected to the 2 mV 0.5 Megohm input of the recorder. No connection with the telephone itself is necessary. A programme indicator, EL.3979, is available.

Philips new tape recorder is compact



CORONATION HONOURS LIST

(continued from page 1054)

Electrical Radio Co. Ltd.; **Mr. R. H. Linnell,** factory superintendent, British Thomson-Houston Co., Leicester; **Mr. A. W. Lovelock,** development and production manager, S. G. Brown, Ltd.; **Mr. P. Morrell,** A.M.I.E.E., lately generation engineer (operation) North Eastern Division, B.E.A., **Mr. G. A. H. E. Poole,** factory manager, Joseph Lucas Ltd., Birmingham; **Mr. J. R. Reed,** branch accountant and office manager, English Electric Co. Ltd., Preston, **Mr. R. D. Salmon,** A.M.I.E.E., chief development engineer, Creed and Co. Ltd; **Mr. H. Turner,** foundry manager, International Combustion Ltd.; **Mr. J. H. Naylor,** district commercial engineer at Barnsley to the Yorkshire Electricity Board; **Mr. F. A. Meldrum,** A.M.I.E.E., area engineer, Telephone Manager's office at Liverpool G.P.O.; and **Mr. A. H. Blackwell,** director, works manager, David Brown Cos.

In the lengthy list of recipients of the B.E.M. are **Mr. H. J. E. Andrews,** electrician, Littlebrook power station, S.E. Division, B.E.A. (for services during the floods); **Mr. J. R. Brown,** construction foreman, South West Scotland Division, B.E.A., Glasgow; **Mr. P. S. Colleypriest,** assistant engineer (electrical planning) South Eastern Division, B.E.A., Hove; **Mr. R. H. Hastings,** installation inspector, Sheffield district, Yorkshire Electricity Board; **Mr. D. W. Hopkin,** linesman, South Wales Electricity Board, Pontyclun; **Mr. T. D. Horton,** chargehand coal plant operator, South Wales Division, B.E.A., Pontypridd; **Mr. J. Husbands,** electrical fitter, Electric Construction Co.; **Mr. S. R. Jones,** mechanical fitter, Midlands Electricity Board, Birmingham; **Mr. W. Makepeace,** boiler house maintenance engineer, Southport power station; **Mr. J. Murray,** foreman armature winder, Tuscan Engineering Co., Ltd.; **Mr. J. E. Prothero,** electrical fitter, English Electric Co., Ltd.; **Mr. A. C. Wragg,** coal plant supervisor, Rotherham power station; **Mr. M. R. Wheatley,** foreman turbine driver, Spondon power station; **Mr. W. J. Webber,** foreman, Aluminium Wire and Cable Co., Ltd.; **Mr. A. J. Abbott,** foreman, Rotax Ltd., South Harrow; **Mr. A. Ball,** electrical section leader with Saunders-Roe Ltd.; **Mr. R. G. Pain,** setter-operator, AC-Delco Division of General Motors Ltd.; **Mr. W. J. Sewell,** electrician with North Thames Gas Board, Westcliff-on-Sea (another award for services in the floods); **Mr. C. Trego,** conveyor attendant, Weston-super-Mare, to the South Western Division, B.E.A.; **Mr. C. W. Warde,** tool shop assistant foreman, Automatic Telephone and Electric Co., Prescot; **Mr. R. R. E. Cooper,** electrician, Weybourne Camp, War Office (another flood award); and **Mr. W. T. J. Cox,** radar chain installation engineer, Marconi's Wireless Telegraph Co., Ltd., Pembroke.

The WEEK in NEWS

Are Churches Commercial Premises?

Sub-committee Formed to examine Tariff Problem

NUMEROUS complaints have been received by Area Boards throughout the country concerning the prices which churches, institutions, schools and old people's houses have to pay for their electricity. Prominent among those to whom representations have been made is the Southern Board, and the Area Consultative Council, in an effort to solve the problem, has appointed a sub-committee to examine the effect of the new commercial tariff on such premises and to formulate an alternative scheme. At the Council's meeting last month, the deputy chairman, Ald. E. W. B. Gill, attacked the scale of charges. He said the people concerned had nothing in common with shops and similar buildings.

In the first place, Ald. Gill said, the Board maintained that those concerned were receiving electricity at too cheap a rate. He refuted this by saying that the original charges were imposed by precisely the same officials. The Board's second contention was that if electricity was used when they wanted instead of when the consumer wanted, it could be supplied at a cheaper rate. Ald. Gill submitted that everyone attending church was not consuming electricity in the home, so that they were actually decreasing the peak demand. He instanced one church in Oxford where the electricity bill had increased by some 183%.

Clr. Austin drew attention to the fact that Boards would soon be able to supply all the power required, but that meanwhile people were being driven away from electricity. Council chairman, Mr. A. Lockwood, brought a sobering influence to a lively debate. He said that some institutions would find they benefited from the commercial tariff. He thought there was a case for discussion as, strictly speaking, the bodies concerned were not commercial, and it might be expedient to have a new class of consumer.

Coronation boosts Television Sales

LATEST figures issued by the R.T.R.A. show that while sales of radio sets continued to decline during March, those for television sets rose slightly. The demand for television can almost certainly be attributed to the Coronation, and most shops are said to be experiencing good business as June 2 approaches. Radio sales which fell from 5·64 to 5·3 are compatible with the usual seasonal decline. March 1952 figure was 6·73. Sales of TV sets during March amounted to 8·31 as compared with 8·1 in April and 8·29 in the same month last year.

ELECTRICITY BOARD INTRODUCES GAS ON SCOTTISH ISLAND

BECAUSE the cost of supplying electricity to outlying islands in the Shetlands was prohibitive, the N. of Scotland Hydro-Electric Board is negotiating for the supply of Calor gas to the Island of Whalsay. This was announced last week by the Board's chairman, Mr. T. Johnston. He said meetings had been held with the Calor gas company and with the Aberdeen Shipping Co., and both had agreed to co-operate.

The net result, he said, was that the Board had formed the Whalsay Development Light and Power Committee, which had already decided they would be able to reduce the price of Calor gas to the island's 88 consumers by about 15%. If the experiment proved successful there was no reason why the scheme should not be extended to other Shetland islands.

Mr. Johnston, who was speaking at the official opening of the new diesel engine generating station at Lerwick (see also page 1069), said the Board were not mere electricity producers; they were enjoined to assist in the economic and social recovery of the Highlands.

The First Half-Century

A strong appeal is being made to station electrical engineers especially, and to others interested in the sale of electrical appliances, to do what in them lies to push the sale (on the hire system as the *Times* has it) of electric heating and cooking appliances. It is pointed out that gas stoves have been popularised mainly through the energy and push of the gas companies in arranging easy terms—yet profitable to themselves—of hire and purchase, and in taking pains to explain to their customers how to use and manage them. Electric stoves have many advantages over gas, and the one drawback of expense is steadily diminishing and can be cut down enormously by a little care and intelligence on the part of the users.—*From our issue of June* 4, 1903.

FINLAND HAS LARGE POWER PROGRAMME

FINLAND'S economy during the past decade has revolved mainly around her payment of reparations and the surrender of territory to Russia. The first necessitated an expansion in industry, and the second resulted in a reduction in hydro-electric generating capacity. As regards industry, and electrical engineering in particular, the Overseas Economic Survey, just published, states that Finland can now meet most of her requirements except for special types of equipment and particularly large units. Production includes such items as transformers, switchgear, cables and wires, incandescent lamps, radios and meters.

Extensive generation programmes have kept pace with power demands, but consumption is increasing. It is estimated that in addition to the present programme new constructions should be put in hand to produce an additional 1,000 million kWh by 1955. The U.K. already enjoys a substantial share in the electrical machinery market.

OFFICIAL PUBLICATIONS

OVERSEAS ECONOMIC SURVEY: Finland (see this page). H.M.S.O. 4s.

BRITISH STANDARD B.S.1977: Copper for Electrical Purposes, Tubes (High Conductivity).

DEFENCE SPECIFICATIONS, for use of Govt. Depts. Def. 10. Miniature Electric Cables. H.M.S.O. 2s.

ALL SPACE SOLD

A PROGRESS report on preparations for the second Fuel Efficiency Exhibition, which is to be held in Manchester in November, was given last week by the organisers, Provincial Exhibitions, Ltd. We understand that all the space in all three halls of the City Hall has been sold. It is also stated that entirely new types of apparatus, designed for improving fuel efficiency, both in the home and in the factory, will be exhibited for the first time. The exhibition opens on November 18 and closes on the 28th.

Royal visitors to the Midlands Electricity Board. During their tour of the Shropshire and West Midland Agricultural Show at Shrewsbury, the Duke and Duchess of Gloucester are welcomed at the Board's stand by the chairman, Ald. W. S. Lewis

Meter Readers' New System

METER readers in the Wolverhampton district of the Midlands Electricity Board are to adopt a new method of recording payments for electricity by consumers with prepayment meters. Hitherto the reader has given a receipt for cash collected from the meter and the consumer has signed for any money refunded. In future householders will be issued with a card on which will be recorded full details, including units consumed, amount due, cash collected and amount of the rebate if any. A duplicate copy of the information will be kept by the Board. This new system is to start with the meter readers' next visit.

Fuel Economist

WE note that *Fuel Economist* which has hitherto been published fortnightly, will in future appear only quarterly. In its editorial of the current (May 22) issue it is stated that what appears to be most needed is a quarterly review—a consideration of past activities in the fuel industry. The next issue will be in September. The paper deals with all fuels, with particular emphasis on solid fuel.

Walsall's History of Electricity

AN enterprising exhibition entitled the "Industrial History of Walsall" took place in that town towards the end of last month. It was held to celebrate coronation year, and reviews Walsall's expansion. It is particularly pleasing to report that two of the most impressive stands at the show were devoted to the history of electricity. The Midlands Electricity Board were especially prominent. Apart from a comprehensive series of charts and photographs, the Board exhibited the first minute book of the Walsall Corporation Electricity Supply Department. This contained the story of early efforts, in 1895, to bring electric light and power to the town. It showed that even in those days there was a smoke-pollution problem and the coal used then cost no more than 6s. 4d. a ton. Nearby was the stand of Walsall Electrical Co., feature of which was the display of two early pieces of electrical equipment.

Electric Railways in the Highlands

INVERNESS County Council have asked the N. of Scotland Hydro-Electric Board for full details on the possibility of running electric trains in the Highlands. A motion seeking the report was carried unanimously at a recent council meeting. The motion also called for information on the estimated cost per ton, per mile, as compared with present costs of steam power. Its object is to explore the possibility of reducing freight charges.

Copper Price Down

The Ministry of Materials has announced that as from Friday, May 29, the selling price of electrolytic copper was reduced by £1 to £252 per ton delivered. This reduction follows a slight fall in the American quotation on which the Ministry bases its price.

Lincs. Conference on Rural Electrification

THOSE who have a great interest in the speedy expansion of electricity supplies to rural areas, and they appear to be most numerous, will no doubt be interested to learn of a special meeting arranged at Spilsby recently by Cdr. J. F. W. Maitland, M.P. The conference was between local authorities and representative organisations in the Parliamentary division and the E. Midlands Electricity Board. Its object was to give the Board an opportunity of expounding their future development programme and of explaining difficulties.

Cdr. Maitland emphasised the need for electricity to increase food production, and also to stop the drift of labour away from agriculture. He hoped the meeting would act as a further spur to those responsible for rural electrification. The Board's point of view was given by Mr. J. P. Tucker, Lincolnshire's sub-area manager. He instanced one district where it would cost £35,000 to supply 101 consumers if all took the supply. To meet complaints about low pressure, a plant was being established at Boston to bring in a 132 kV line there instead of 40 miles away. It was hoped to carry out the work before next winter.

Consultative Council chairman, Mr. L. L. Perkins, who presided, assured the meeting that rural electrification was well to the fore in deliberations and the Board was always 'anxious to do everything possible to hasten supplies to rural areas. He gave figures to show that of the money allocated for rural schemes, the division, had, if anything, received rather more than its share.

3-D Film Projectors Interlinked Electrically

THE showing of 3-dimensional films requires the inter-linking of two projectors so that they both run in synchronism instead of alternately as is the case with non-stereoscopic films. Keeping the two projectors accurately in step has presented a problem which cannot be solved adequately by mechanical methods. We hear that this interlinking of projectors by electrical means has been made possible by the development by the G.E.C. of a modified Twin-Torq motor With ordinary films there is invariably a difference between the load characteristics of the two projectors and consequently one motor runs at a slightly lower speed than the other. To correct this a Twin-Torq motor is coupled to the driving motor of each projector, preferably by a direct chain drive from one motor shaft to the other. All four motors are then electrically connected.

EXPERIENCES IN U.S.

THE principal guest at the Batti-Wallahs' luncheon last week was Mr. G. F. Peirson, Chief Engineer of the Midlands Electricity Board, who described some of his experiences when he went to the U.S. in 1947. During his tour he said he was impressed by the ability to get the maximum output from a given capacity and the use of high-speed reclosing to avoid prolonged faults in rural areas. Among things he deplored was the habit of l.t. overhead electrification, and the waste of copper and transformer capacity due to the adherence to 115 volts for l.t. distribution.

Electricity's Role

THERE has been plenty of evidence of the electrical industry's role in the Coronation festivities, particularly as regards decorations. Some of the contributions to the celebrations and ceremonies were not quite so apparent, however. One such was that of Simplex Electric, whose Creda water-heaters were selected for installation in all the robing rooms of the Coronation Annexe. Both in the Abbey and the Annexe all the main services were controlled by the company's Monarch switchgear.

Early pictures of Broadgate House, the first part of the large-scale reconstruction of the centre of bomb-blitzed Coventry. Some details of the electrical work were given in these pages in our May 21 issue. One picture gives a general view showing the bridge over Hertford St., Lady Godiva's statue on the left in the gardens, and the shopping arcade on the right. The other is a close-up of the partially completed arcade

Free Cookers in Edinburgh's Houses

IT will be recalled that a proposal to omit gas and electric cookers from new houses and supply only the points, was referred back at the April meeting of Edinburgh's town council. This decision was reported in our May 14 issue. Now, for the second time, the city's Housing Committee has decided that tenants will have to bear the cost of gas or electric cookers in new municipal houses.

Before final approval by the full council, a sub-committee is to try to negotiate better terms for the cookers with the fuel boards. Present cost to the corporation is £16 5s. 6d. For an electric cooker a tenant would have to pay about £29. In opposition it was stated it was wrong to say the council provided free cookers to tenants as the cost was always included in the rent. If the plan was approved, the council would in effect be giving the gas and electricity boards an extra £10.

Winding up the discussion, Clr. W. Prowse said if the existing practice was continued, it would cost about £25,000 a year at present rates of building. Under the new proposed scheme a council tenant would be receiving a cooker for 1s. a week and in ten years' time the cooker would become his property.

Sculleries should Not be Assessed

THE assessment of rooms for basic electricity tariff rates on domestic premises, particularly the inclusion of sculleries, was attacked at last week's meetings of both the Yorkshire and Merseyside and N. Wales Consultative Councils. In Sheffield two houses were cited as having both kitchens and sculleries, the former being assessed as living rooms and the latter as kitchens, though no cooking was done in the scullery. A resolution was passed asking the Boards to interpret their ruling on the assessments.

Members of the Merseyside Council were told that the inclusion of sculleries and unwired rooms in the assessment of tariff rates had caused dissatisfaction and numerous complaints. They, too, sought their Board's observations on the matter.

New York Lightship Re-equipped by U.K.

A SHORT time ago we reported the completion of two new lighthouses, one of which, at Corregidor, was the work of the British firm of Chance Bros., Ltd. This same company has recently had a great deal to do with the recommissioning of the Ambrose Light-vessel stationed at the entrance to New York harbour. New apparatus installed comprises a pendulum on double gimbal bearings, with optical equipment above the bearing mounting. Optical equipment consists of four pairs of focus mirrors with a 1,000W high efficiency lamp at the focus of each mirror. The light can be seen at a distance of nearly 50 miles in clear weather.

Eire Plans Diesel-Electric Railway

EIRE'S transport undertaking, the C.I.E., is to convert its entire railway system to diesel and diesel-electric operation, we understand from reports reaching us from Dublin. The report was based on a recent announcement by the C.I.E. that they had decided to create £2½ m. 5% Transport Stock at £99 a £100. The announcement stated that the money would be used to acquire diesel-electric locomotives and diesel rail cars, among other items. It follows the recent plan submitted to the Minister of Industry and Commerce which stated that with the almost complete transfer to diesel power and a long-term scheme for capital re-equipment, the undertaking would be able to carry on without undue loss. It is estimated that a complete transfer to diesel operation would cost about £3 m. over a period of years, but this would be repaid in profit on working costs in about five years. The new stock has been guaranteed by the Government.

Nationalised or Private Electricity?

THE relative merits of running the electricity supply industry by public or local authorities has again featured in the news. A memorandum, prepared by the National Municipal Electricity Consumers' Association and aimed at giving more latitude to local bodies, was discussed at a recent meeting of Mold (Cheshire) urban council. It was decided to support the memorandum. A Central Electricity Board was very inconvenient and far more costly, it was stated. Men had invariably to be sent some distance to carry out repairs and in many cases it appeared that three or four men were doing the work of one. The memo did not escape criticism. One councillor said if the proposals were accepted they would be putting into private hands something which belonged to the country as a whole. Before nationalisation, it was alleged, Mold's own electricity service was inefficient.

On the domestic side a simple hire system was sought. Council chairman said that if the authority supported the memorandum, there was a possibility that they would get a bigger say in matters.

Zinc Premiums

THE premium for 99·95% grade zinc has been increased from £4 to £6 per ton, and that for 99·99% grade zinc from £6 to £9 per ton, for sales by the Ministry of Materials. This was announced by the Ministry, and came into effect on May 21. It is intended to alter the premiums charged according to the premiums currently fixed by producers.

Electric Locos for B.R.

AN order for fifteen power equipments for 350 h.p. diesel-electric shunting locomotives has been placed with the British Thomson-Houston Co., Ltd., by British Railways. This is understood to be part of the first order in a five-year programme which will increase the number of diesel-electric shunters in operation on British Railways by a substantial amount. The order for power equipments has been divided between four manufacturers.

Typical of the many expressions of loyalty to be found in the windows of electrical shops and offices was this simple yet inspiring display at the London headquarters of the General Electric Co.

NEWS IN BRIEF

U.S. Air Force in Europe has placed a contract worth $1,400,000 for v.h.f. radio transmitters, receivers and spares with the G.E.C.

A new course for stokers, leading to "The Boiler Operators' Certificate," has been instituted, Mr. S. N. Duguid, chairman of National Executive Council, stated at annual meeting of the N.W. Division of the National Smoke Abatement Society.

Over 150 students attended another most successful summer school organised by the British Welding Research Association at Leamington Spa, last month.

Essex Business Houses Athletic Meeting in which E. K. Cole, Plessey and Marconi were among the competitors took place on Ekco's sports ground.

Object of the overseas sales convention organised by Simplex Electric Co. last week was to give overseas agents a comprehensive review of how the company is to meet the call for more exports. Agents and representatives from 34 countries attended.

There will be over 40 commercial exhibitors and a further 30 stands occupied by Safety Group members at the second biennial Safety and Factory Efficiency Exhibition opening at Bingley Hall, Birmingham, on June 19.

Two lighting schemes recently carried out by the B.T.-H. Co., Ltd. Left is fluorescent illumination over electrically-driven double creepers at Victoria Colliery, Stoke, comprising 2 ft. 40 W lamps and fittings proof against fire-damp. In the factory of R. and W. H. Symington and Co., Ltd. (right) is universal trunking which carries 5 ft fluorescent reflector fittings. The 12,000 ft of trunking also carries cables for wireless loudspeakers, telephone, fire alarms and motor drives

Sum of £150 has been remitted to E.I.B.A. as result of Lancashire Area Qualifying competition for the Association's National Golf Competition.

Oldham and Son Ltd. lent fifty 12 V storage batteries for special lighting purposes in temporary buildings erected in London parks during the Coronation celebrations.

Second International Chemistry Exhibition and World Congress of Chemists will take place in Paris between June 18 and 29.

We regret that due to a series of misunderstandings the breakers shown in the Yorkshire Switchgear and Engineering Co. Ltd.'s advertisement on page 31 of our May 21 issue were wrongly captioned. It should have read: Breakers 250 MVA and above now fitted with Arc Traps.

Company Activities . . .

British Insulated Callender's Cables

The record results achieved by this concern in 1952 were mainly due to materials being more freely available, enabling substantial increases both in the value and the volume of turnover,

Year to Dec.31	£ Trading Profit	£ Net Profit†	% on Ord. Earn'd	% on Ord. Paid	Ord. Price High	Ord. Price Low
1948	6,596,476	2,326,058	44	6⅔	40/9	31/9
1949	6,738,264	2,583,097	50	6⅔	36/3	28/7
1950	6,130,642	2,044,170	41	7½	35/7	29/6
1951	7,966,464	2,696,866	53	9	37/9	29/6
1952	9,423,182	3,069,756	44	10	34/1	24/4

† Available for parent company.

according to Sir Alexander Roger, chairman Output of the Power Cables Division, for instance, was some 30% better than in 1951. He also referred to the need to provide adequate reserves against contingencies—a further £500,000 is to be transferred to Contingencies Reserves bringing that total up to £2,500,000. This has become necessary in view of the downward trend of metal prices in recent months, and of the flooding of the Erith works in January last. The loss caused by the latter may amount to £400,000, he states. On the future outlook, Sir Alexander is also cautious. In recent months there has been a falling off in the rate of intake of new orders due to firms using up their existing stocks in anticipation of a further reduction in metal prices.

Sidney S. Bird and Sons

The dividend for 1952 is again 15% plus a bonus of 5%. But the group profit after all charges, and taxation, is about £3,500 down on the previous year, at £16,691.

Calcutta Electric Supply Corpn. Ltd.

The gross revenue for 1952 amounts to £4,773,561—an increase of £423,044 over that of the previous year. But expenditure at £3,539,645 is also over £500,000 higher. A final dividend of 3% again makes a total of 6%.

Engineering and Lighting Equipment Co.

The net profit for the year ended March 31 last is £38,585, compared with £33,616 for the previous year. This figure is struck after charging taxation of £81,000 (*£51,500*). The dividend has also been raised by 5% to 15% for the year.

Harland Engineering Co.

Sales during 1952 totalled approximately £1,500,000, while outstanding orders total over £3,000,000, of which 46% is for export. The slight improvement in the group trading profit for 1952, shown in the accompanying table, is after making provision in the valuation of raw materials on hand for the fall in the market prices of non-ferrous metals, Mr. H. Cowan-Douglas, the chairman, adds. He reports that the South African subsidiary has again shown good results and the Australian associated company continues to make excellent progress in spite of the difficult times through which that country's trade has been

Year to Dec.31	£ Trading Profit	£ Net Profit*	% on Ord. Earn'd	% on Ord. Paid	Ord. Price High	Ord. Price Low
1948	132,694	48,105	39	7	9/-	5/10
1949	115,102	36,142	25	7	7/7	4/10
1950	337,851	70,640	41	9	6/1	4/9
1951	203,822	65,955	38	10	9/-	6/-
1952	206,013	70,511	39	10	7/9	5/7

* Available for parent company.

passing. But the Indian associate has so far proved a disappointment. It has been trading at a loss and to provide against the possible necessity of writing down some of the company's holding the directors recommend an extra allocation to reserves.

W. T. Henley's Telegraph Works Co., Ltd.

This company's results for 1952 are satisfactory in view of the loss sustained by a subsidiary (presumably the tyre concern). But the set back in the group profits is largely absorbed by the lower

Year to Dec.31	£ Trading Profit	£ Net Profit	% on Ord. Earn'd	% on Ord. Paid	Ord. Price High	Ord. Price Low
1948	1,595,474	644,488	71	20	26/3	22/4
1949	1,792,482	600,078	67	20	26/6	21/1
1950	1,675,393	617,446	71	20	25/-	21/-
1951	1,704,401	646,447	64	20	27/6	19/3
1952	1,392,118	522,398	15	13*	20/6	14/4

* Plus 100% capital bonus.

amount of taxation charged. Henley's transfers to group reserves amount to £280,000 (*£500,000*) after crediting £20,000 from materials price fluctuations reserve. The total group assets have increased from £13,703,911 to £14,616,694, with the net current position substantially improved.

Newton Brothers (Derby) Ltd.

The directors recommend the capitalisation of £118,488 (of which £102,151 now stands to the credit of E.P.T. Post War refund and £16,337 in the General Reserve) by the issue to shareholders of a free bonus of 1,184,886 Ordinary 2/- shares, on the basis of three new shares for every four held. These shares will rank for any dividends to be declared for the year ended March 31, 1953. The proposal is to be considered at a meeting on June 15.

Parnall (Yate) Ltd.

The large decrease in the group profit, as shown in our table, is wholly accounted for by the results of Ascot Gas Water Heaters Ltd., as compared with the previous year, the Earl of Limerick, the chairman, reveals. He blames hire-purchase restrictions for the reduction in orders for gas water-heaters received by the whole of the trade dropping from over 15,000 units in the month before the introduction of the Order to less than 5,000 units in August. Of Parnall (Yate), he says

that the sales of washing machines generally decreased substantially because of import restrictions in Australia and elsewhere, but sales in connection with rearmament work increased during 1952. In the profit and loss account, we note that depreciation of fixed assets, at £38,450, is nearly £6,000 more than charged for the previous year.

Year to Dec.31	£ Trading Profit	£ Net Profit	% on Ord.		Ord. Price	
			Earn'd	Paid	High	Low
1948	118,390	21,743	5	5	4/10	2/9
1949	83,888	29,586	7	5	3/10	2/-
1950	107,454	46,867	12	6	4/1	2/5
1951	140,900	41,877	11	6	4/4	3/3
1952	55,082	1,317	0·3	6	4/7	2/10

Philips

There are reports of a £600,000 city deal in the Ordinary shares of Philips Incandescent Lampworks Holding Co., of Holland. These have been placed with the big institutions.

Siemens Brothers and Co., Ltd.

For 1952 the group profit, after charging taxation, amounts to £556,425—only £23,517 less than the previous year, although taxation absorbs an extra £163,996. The dividend is maintained at 10% on the enlarged capital.

Dividends Declared

General Cable Manufacturing Co.—Interim of 12% (*same*), but on larger capital.

R. A. Lister and Co.—Interim of 2½% (*same*).

Electric Supply News . . .

Douglas (I.O.M.)

Among the sums which the corporation wishes to borrow to cover various developments are those of £29,676 for the installation of a steam turbine at Pulrose power station, £6,070 to complete the cost of extension of the electrical plant, £45,200 for substations, l.v. mains and services, meters, heaters, cookers and kettles required for the current financial year, and £6,000 for new public lamps.

Shetland

The new 4,200 kW diesel generating station at Gremista, near Lerwick, of the North of Scotland Hydro Electric Board, was officially inaugurated last week by Lady Erskine, wife of Sir John Erskine, a member of the Board. The station has three 1,000 kW and two 600 kW sets installed. The 1,000 kW engines were made by British Polar Engines, Ltd., and the alternators by Bruce Peebles & Co., while the 600 kW sets have engines made by Mirrlees, Bickerton & Day, and Bruce Peebles' alternators. Original plans provided for the station to have an ultimate capacity of 6,000 kW.

Tamworth

The diversion of the B.E.A.'s new o.h. grid line around Catton Hall, near Tamworth, is still not settled, it seems. Mr. J. Snow, the local M.P., feels that the public inquiry into the routing of the line was prejudiced by certain work done on the pylons before the inquiry had concluded, and, after touring the area, he has communicated with the Minister of Fuel and Power. The latter recently informed Mr. Snow that the B.E.A. had begun work on the foundations of some of the cable towers, but not those proposed to be built on the properties of the only objectors to the line. Whatever had been the result of the inquiry, the Minister indicated, there was ample room left for any deviation considered necessary. He considered the Authority had acted correctly in not allowing the objections to hold up work on those parts of the urgently needed line to which no objection had been lodged. There was, however, one piece of work, not done by the Authority, which, he said, properly should not have been started before the inquiry. Owing to an oversight, the Post Office had not been told of the objections, and it went on with the work involved in putting its lines underground at the only place where the proposed power line would have crossed them. But it was quite a minor work and even if it had been known to either his inspector or himself it could not have affected his decision, the Minister added.

Winchester

A new 33kV feeder cable is being laid between the grid supply point at St. Cross and the Winchester Electricity Works at Gordon Road. The last major reorganisation of the city's electrical system was carried out in 1933, when the distribution system was changed over from d.c. to a.c., coincident with the taking of a bulk supply from the C.E.B.

LIGHTING SCHEMES

Arnold.—U.D.C. has decided to install sodium discharge lamps in Marlborough Road and Knighton Road.

Blackpool.—A £60,000 scheme for the conversion of more street gas lamps to electricity, approved by the Highways Committee, has been deferred by the Finance Sub-committee for twelve months. The scheme is to be again considered when the annual estimates are prepared.

Chevington (Northumberland).—The parish council is to consider an electric street lighting scheme.

Sutton Coldfield.—The M.o.T. is unable to support an all-fluorescent lighting scheme for The Parade and Trunk Road A.38, but might agree to a short length of fluorescent with sodium or mercury vapour lighting for the remainder, the Highways Committee has reported. The Borough Surveyor has prepared a revised scheme to provide partly fluorescent and m.v. lighting, at a cost of approximately £3,750.

Commercial Information

CONTRACTS OPEN

HOME

June 5.—Maidenhead T.C. Supply of lanterns and auxiliary gear, and also provision and erection of concrete columns, lanterns, gear and wiring, for mercury lighting in group A along Bath Rd. Borough Engineer and Surveyor, 14 Cranfurd Rise. Deposit £2.

June 5.—Oldham T.C. Supply of concrete lamp columns and electric lanterns in groups A and B. C. Worswick, Lighting Superintendent, Gas St. (See May 14 issue.)

June 6.—Billericay U.D.C. Provision and erection of 50 sodium discharge lamps on concrete columns along High Rd., Pitsea. Surveyor, Council Offices, High Street.

June 6. — Bredbury (Ches.) U.D.C. Supply and installation of 140 W sodium street lighting, including concrete columns, lanterns, lamps, control gear, etc., along 2¼ miles of A.560 trunk road. Engineer and Surveyor, Council Offices, George Lane. Deposit £2 2s.

June 6.—Ryton-on-Tyne U.D.C. Electric lighting and heating in 28 houses at Park Field North. Surveyor, Council Offices, Ryton Tower.

June 8.—Barnstaple T.C. Installation of following in Rolle St. and Braunton Rd.: (a) supply and erection of class A concrete columns and brackets; and (b) supply of 140W sodium lamps and fittings. Borough Surveyor, The Castle.

June 8.—Morley T.C. Supply and installation of sodium lighting along trunk road A.650. Street Lighting Superintendent, Town Hall. Deposit 10s. 6d. (See May 7 issue.)

June 8.—Ormskirk U.D.C. Supply and erection of 105 concrete columns, lanterns, 140W sodium lamps, switchgear and other equipment for Group A street lighting. Surveyor, Council Offices, Burscough St. (See May 14 issue.)

June 9.—Inverness. Supply of electric lamps during year ending June 30, 1954, for Craig Dunain Hospital. Secretary of Board of Management at the Hospital.

June 10. — Newcastle - under - Lyme T.C. Supply and installation of enclosed type lanterns, 150 W tungsten filament lamps, control gear and concrete columns for Group B lighting on estate roads. Borough Engineer and Surveyor, Lancaster Building, High St. Deposit £2 2s. (See May 28 issue.)

June 12.—Aberdeen. Electrical work in erection of school at Ballater. G. Bennett Mitchell and Son, architects, 1 West Craibstone St., Bon Accord Sq.

June 13—Salford T.C. Supply of three refrigerators of 7 to 10 cu. ft capacity and two of 15 cu. ft capacity. Street Lighting Superintendent, 9, Frederick Rd., Pendleton, Salford 6.

June 13—Edinburgh T.C. Electrical installation in new Portobello fire station. City Architect's Office, City Chambers.

June 19.—Belfast. Supply, erection, etc., of 110 kV and 33 kV main cables, auxiliary cables, etc., for Municipal power station to Donegall substation (N.1235), and 33 kV main cables and accessories for Stage 2 of 33 kV distribution system (N.1236). Merz and McLellan, Consulting Engineers, Carliol House, Newcastle-on-Tyne Deposit £5 5s. (See May 7 issue).

June 19.—Londonderry. Electrical installation in Bellaghy School meals kitchen and dining hall. County Education Architect, Education Office, New Row, Coleraine. Deposit £1.

June 24.—Windsor T.C. Electrical installation in 50 houses on Manor Farm site. Borough Engineer, Kipling Memorial Building.

June 27.—Leven T.C. Installation of 140 W sodium discharge street lighting along trunk road A.915 for about one mile. Burgh Surveyor, Carberry Hse.

June 29.—Manchester. Electrical installation (phase 2) at Queens Rd. 'Bus Garage. City Architect, Town Hall. Deposit £1 1s. (Advertised in this issue.)

June 30—Ashbourne U.D.C. Supply and erection of 114 150 W tungsten lamps and standards for stage 2 of public lighting scheme. Engineer and Surveyor, King Edward St. Deposit £1 1s. (See May 28 issue.)

June 30.—Grimsby T.C. Electrical installation in erection of Western primary junior school at Broadway, Littlecoates. J. V. Oldfield, Borough Engineer and Surveyor, Municipal Offices, Town Hall Sq. Deposit £5.

No date stated.—Hastings T.C. Electrical installation in 53 dwellings on Gate Town estate and adjoining sites. Borough Engineer, 37 Wellington Sq. Deposit £2 2s.

OVERSEAS

*Details of items marked * may be obtained on application to the Board of Trade, Horse Guards Avenue, S.W.1, quoting reference.*

June 22—South Africa. Tenders invited for material for part electrification of Alrede. Contract 11/01/1953: (a) supply of 6,600 V cables and auxiliary material for h.v. system; (b) supply of 380/220 V cables and auxiliary material for l.v. system. Contract 11/02/1953: (a) supply of 6,600 V o.h. line material, etc., for h.v. system; supply of 380/220 V o.h. line material and street light equipment for l.v. system. Contract 11/03/1953: supply to stores at Alberton of (a) fifty-four 600V switch units, (b) 9 battery units, (c) 9 link pillars for 6,600 V, (d) a l.v. distribution board and two l.v. switchboards. Contract 11/04/1953: supply to stores of (a) two 3-phase 50 kVA oil-immersed 6,600/380/220 V, 50 c/s outdoor type transformers, (b) one 3-phase 6,600 V neutral earthing compensator, with current limiting resistances, etc. Documents from Consulting Engineer, Dr. J. K. Marais, Transvalia Building, 21 Stiemens St., Braamfontein (P.O. Box 8006), Johannesburg. Deposit £5.

June 23.—Tangier. Supply of electrical equipment for 5,500 V transformer station. Tangier Water and Electricity Board: 4 rue Vermeer. B.o.T. (Ref., CRE 16591/53).*

June 25—Uruguay. Supply of 4,550 distribution boxes without protection and 3,650 terminals for Administracion General, Usinas Electricas y Telefonos del Estado Montevideo. Tender No. 3859/53—Spec. No.

2186. B.o.T. (Ref.: CRE 17077/53).*

July 1—Australia. Supply, maintenance, etc., of 6,600 V switchgear, and accessories, metal-clad or outdoor kiosk type, for State Electricity Commission of Victoria, 22-32 William St., Melbourne. (Spec. no. 52-53/49). B.o.T. (Ref.: CRE 18265/53).*

July 3.—India. Supply of considerable quantities of electric cable, total amount of about 75,650 yd. involved, for Director-General, Stores Dept., 32/44 Edgware Rd., London, W.2. Ref.: S.I.3578/52/1.

July 15.—Australia. State Electricity Commission of Queensland requires manufacture, supply of 39 11 kV Auto Reclose outdoor pole mounting type oil circuit-breakers, under spec. no. 389. Secretary, Scottish Union Hse., Eagle St., Brisbane. B.o.T. (Ref.: CRE 17574/53).*

July 15—New Zealand. Electricity Dept. of Dunedin requires supply of a 3-phase set of lightning arresters for Halfway Bush substation. Contract No. 477. B.o.T. (Ref.: CRE 17167/53).*

July 16.—South Africa. Supply, erection, etc., of plant, including clinker and fine ash paddle extraction equipment, ash and dust belt conveyors and skip hoist, with necessary chutes, hoppers and equipment to handle ash from each of six boiler units. Documents available from Head Office, Electricity Dept., Johannesburg. Plant is for Kelvin power station. Contract CK-8-Tender N.1276.

July 29.—Australia. State Electricity Commission of Queensland invites tenders (Spec. no. 372) for supply, maintenance, etc., of 11 kV metal-clad compound filled switchgear for new Townsville power station. Commission is at Scottish Union Hse., Eagle St., Brisbane. Copy of spec. at £1 1s. B.o.T. (Ref.: CRE 18291/53).*

July 30.—Tangier. Water and Electricity Board invites tenders for supply of fluorescent street-lighting equipment for Plateau du Marshan. Documents (Frs. 2,000) from the Board at 4 rue Vermeer. B.o.T. (Ref.: CRE 17921/53).*

Aug. 14.—Australia. Supply of 1,200 bracket type mounting and 300 suspension type mounting street lighting lanterns suitable for 100/200 W incandescent lamps. Former with asymmetrical refractors at 160° and latter with symmetrical refractors. Chief Engineer and Manager, Dept. of Electricity, Kelvin House, Adelaide St., Brisbane. Specifications at 10s. 6d. a copy.

Sept. 15.—New Zealand. State Hydro-Electric Dept., Wellington, requires supply of four single-phase 110 kV current limiting reactors, each of 13,333 kVA through capacity, outdoor type, oil immersed and self-cooled. They are for Arapuni power station, Hamilton. Specifications available from N.Z. Govt. Office in London. Deposit £100 and bond £650.

Sept. 29.—New Zealand. Supply of 1,119 galvanised steel transmission line towers for Roxburgh-Islington 220 kV No. 2 line, for Christchurch district of State Hydro-Electric Dept. Specifications available from N.Z. Govt. offices in London. Amount of deposit, £100; and of bond £30,000.

CONTRACTS PLACED

Carlisle T.C. Electrical work in Horraby junior school, David Thomson and Sons, Ltd., £2,876.

Gosforth U.D.C. Electrical installation in 32 houses in Whalton Ave., A. McleanBrown, £1,445.

London. Provision of four electrically driven centrifugal pumps and control gear at Putney Heath re-pumping station for Metropolitan Water Board, Gwynnes Pumps Ltd., £19,409; also supply of one electrically driven submersible pump and two electrically driven surface pumps, etc., at Hadley Rd. pumping station for same, Harland Engineering Co., Ltd., £5,537.

TRADE MARKS

This information is extracted from the Official Journal by permission of the Controller.

Auto-Perc. 716,497. Class 21. Small domestic utensils and containers. Elga Products Ltd., Elga Works, Railway Place, S.W.19.

Electric and Musical Industries Ltd., in design, B713,754. Class 7. Drying, washing and ironing machines. B713,755. Class 9. Specification includes apparatus and instruments for recording, reproducing, receiving and transmitting sound. B713,756. Class 11. Refrigerating machines and installations, etc. Electric and Musical Industries Ltd., Blyth Rd., Hayes, Middlesex.

Your Queries — Answered

"Galvafroid" I.S.P. anti-corrosive paints, makers of? T.E.—Secomastic Ltd., 15 Upper Grosvenor St., London, W.1. (22928)

"Newtons of Taunton", motors, address for spares? S.W.—Hall Motor Repairs, Ltd., Blackriding Works, Werneth, Oldham. (22935)

Paint strippers, electrically heated, makers of? L.E.—Falk Stadelman and Co., Ltd., 91 Farringdon Road, E.C.1; Maurice Cheshire and Co., 29 Soho Hill, Birmingham 19; Baronet Electrical Developments, 20 Regent Road, Harbowie, Birmingham 17. (22948)

"Empire" coffee percolators, American makers of? D.E.—There are a number of firms using the name "Empire" for domestic appliances but try Metal Ware Corp., 1715 Monroe St., Two Rivers, Wisconsin, U.S.A. (22956)

"O'Connor" hotplates, address for spares? A.N.—These were last handled by Tregenna Products Ltd., 111 Clarence Rd., London, E.5, but we cannot find any trace of this concern at the present time. (22,968)

"Davey" coffee percolators, makers of? E.B.—A. D. Davidson Electric Co., 62 Granville St., Birmingham 1. (22976)

"Hanley" shavers, makers of? C.N.—E. Siegrist, Ltd., 39 Berners St., London, W.1. (22981)

The above are selected from questions we have answered this week. If you have a query, send it to us.

(Trade Marks contd.)

Remax. 708,683. Class 11. Specification includes: electric lamp bulbs and holders; heating, ventilating and air-conditioning apparatus all for use with motor vehicles. Remax Ltd., Remax House, Alfred Place, W.C.1.

Sterilator. 716,254. Class 7. Dish-washing machines. C.S.A. Industries Ltd., Avon Works, Wharf St., Warwick.

Tapist. 715,520. Class 9. Sound recording and reproducing machines. E. Shipton and Co., Ltd., Ferndown, Northwood Hills, Middx.

Transition. 716,314. Class 10. All goods. Bonochord Ltd., 48 Welbeck St., W.1.

TRADE NOTES

Changes in Address. The Liverpool branch of Siemens Electric Lamps and Supplies, Ltd., has moved to 20 Banastre Street, Liverpool 3. Telephone: Central 2660 and 3053.

Clarkson (Engineers) Ltd. have moved their London office and showroom to 124 Hammersmith Road, W.6. Telephone: Riverside 6645 and 1815.

Agency. Metropolitan-Vickers Electrical Co., Ltd., announce that Messrs. Van Aalst and Co., Ltd., have relinquished their agency in Dublin and until fresh agents are appointed all inquiries should be addressed to 4 Whitworth Street, Manchester 1.

New Branch. W. T. Parker, Ltd., of Burton-upon-Trent, have opened a new branch at Welham Street, Grantham.

GAZETTE ANNOUNCEMENTS

COMPANIES ACTS

Electronics (Liversedge) Ltd. Meeting of creditors will be held at The Plough Hotel, Westgate, Huddersfield, tomorrow (Fri.) at 12 noon.

BANKRUPTCY ACTS

Receiving Order

London. John W. Cartwright, electrical and general engineer of 166 Lewisham Rd., S.E.13. Date of receiving order, May 19.

Intended Dividends

Brighton. Alice E. Dalmon and Stanley J. Dalmon trading together as P. Dalmon and Sons, electrical engineers, at 60 Terille Rd., Worthing. Last day for receiving proofs, June 9. Trustee is J. S. Bradley-Hole, 7 Old Steine, Brighton 1.

PRICE OF CABLE METALS AND OTHER MATERIALS
(at Friday night)

	£ s. d.	New York price
COPPER, electrolytic	252 0 0	108 0 0
LEAD, good soft pig (foreign)	83-83¼	
TIN (99-99.76%) (Cash)	717½-720	
,, (3 months)	715-720	
ALUMINIUM, commercial purity (del.)	161 0 0	
ZINC	68¾-69	
ARMOURING:		88 0 0
Galv. Steel Wire (0.104 in.)	50 10 0	
Mild Steel Tape (0.04 in.)	40 0 0	

NEW COMPANIES

Extracted from the Register issued by Jordan and Sons, Ltd., 116 Chancery Lane, London W.C.2.

Colin Barralet Ltd. Iron founders, engineers, manufacturers of and dealers in water heaters, etc. Cap.: £6,000. Dirs.: C. E. Barralet, 4 Heverswood, Halstead, Kent; and A. F. Green, 34 Greencourt Dr., Bognor Regis.

Berec (Great Britain) Ltd., Hercules Place, Holloway, N.7. To acquire whole or any part of assets and undertaking of Berec Battery Export Co., Ltd. Nom. cap. £50,000. Dirs: To be appointed by subs. Subs: F. M. Baxter and M. J. Wordley, 6, Austin Friars, E.C.2.

Berec (Europe) Ltd., Hercules Place, Holloway, N.7. To acquire assets and undertaking of Berec Battery Export Co., Ltd., etc. Cap.: £50,000. Dirs.: to be appointed by subs. Subs.: M. J. Wordley and F. M. Baxter, 6 Austin Friars, E.C.2.

Dukes and Briggs Engineering Co., Ltd., 80 Willow Bank, Ashley Rd., Hale, Ches. Electrical engineers, etc. Cap.: £2,000. Dirs.: A. I. Dukes, P. H. Briggs, Vera M. Dukes, Barbara W. Briggs and N. D. Gough.

F. W. Electronics Ltd., 16 The Avenue, New Southgate, N.11. Electrical, radio, radar, television, electronic, mechanical and optical engineers, etc. Cap.: £500. Dirs.: J. Wigman and Marion R. Wigman.

Film Cooling Towers (Mechanical) Ltd., 14 Lincolns Inn Fields, W.C.2. Engineers and contractors for the erection of cooling towers with mechanical means for the application of draught, etc. Cap.: £1,000. Dirs.: to be appointed by subs. Subs.: G. E. Hodgkinson, 14 Lincolns Inn Fields, W.C.2; and D. C. Allin, 98 Palace Rd., Tulse Hill, S.W.2. (clk).

Greenwood-Hughes (Export) Ltd., Beacon Hse., Kingsway, W.C.2. Ventilating and air conditioning engineers, sanitary ware equipment engineers, etc. Cap.: £5,000. Dirs.: B. D. N. Hughes and Constance M. Hughes, J. R. Hughes and L. W. Fox.

Milne-Rundle Ltd. Manufacturers of electrical and mechanical prime movers and engines of all kinds, etc. Cap.: £1,000. Dirs.: His Grace the Duke of Argyll, 48 Upper Grosvenor St., W.1; D. H. Grinnell-Milne, 3 Ennismore Gdns., S.W.7; E. W. Rundle and J. J. Hambidge.

Modern Electric Tramways Ltd., New Bldgs, Brookhill Rd., New Barnet, Herts. Cap.: £3,000. Dirs.: C. W. Lane and L. J. Boylett.

Northern Insulation Co. (Stockton) Ltd., Hunter's Lane, Stockton-on-Tees. Designers and manufacturers of and dealers in sound and thermal insulation materials, etc. Cap.: £10,000. Dirs.: D. Atkin and Mrs. D. G. Atkin.

F. W. Palmer and Co., Ltd., Caesar Engineering Works, Percy St., Hulme, Manchester 15. General and consulting engineers, mechanical, motor and electrical engineers, etc. Cap.: £1,000. Dirs.: E. B. Palmer. Emily Palmer and F. A. Palmer.

Maurice Rodwell Ltd., 27 Cantelupe Rd., East Grinstead, Sussex. Electrical engineers and contractors, etc. Cap.: £1,000. Dirs.: F. M. E. Rodwell and R. M. Emsley.

Rokite Ltd., Newtown Mill, Cow Lane, Burnley. Manufacturers of thermal and acoustic insulation products from mineral, wool, fibre, asbestos or other material, etc. Cap.: £1,000. Dirs.: J. T. Schofield, Annie Schofield and Margaret Schofield.

BUSINESS PROSPECTS

HOME

Altrincham T.C. Plans in hand for 98 flats on Broomwood estate.

Bathavon R.D.C. Construction of 160 houses at Batheaston, nr. Bath. Council's Architect, M. Whalley, 8 Cleveland Place East, Bath.

Birkenhead T.C. Consideration being given to desirability of providing 110 V supply for portable apparatus in Technical College at cost of £2,600.

Bolton T.C. Erection of primary school in Oldham's Lane. Borough Engineer and Surveyor, Town Hall.

Brighton. Underwood Elliott Fisher Ltd. propose to erect factory at Hollingbury, and C.V.A. Jigs, Moulds and Tools Ltd., are to carry out additions.

Camberwell. L.C.C. approval sought for erection of two blocks of 39 flats and maisonettes on Nunhead Crescent site; also for £469,020 scheme for 9 blocks of 173 flats and 39 houses on Kingswood estate.

Cheltenham T.C. Approval granted for erection of 280 houses and 164 flats in Hester's Way.

Coleraine T.C. Preliminary plans approved for 140 extra houses on Hazelbank estate for N. Ireland Housing Trust.

Cornwall. Approval received for junior school at Alverton, Penzance, and secondary school at Treswithian, Camborne. Estimated costs £57,160 and £144,800 resp.

Cumberland. Erection of fire station and 10 houses at Hensingham costing £33,000. County Architect, J. H. Haughan, Portland Sq., Carlisle.

Dartford (Kent) R.D.C. Erection of 40 houses and flats in Beesfield Lane, Farningham. Engineer and Surveyor, Council Offices, West Hill.

Durham. Building programme for this year will now include £137,700 Newton Aycliffe modern school, and £60,000 Peterlee infants' school.

Elstree R.D.C. Application approved by council for light engineering factory on Barnet By-pass for Furzehill Laboratories, Shenley Rd., Boreham Wood.

Fulham. Scheme submitted for secondary school in Peterborough Rd., which will cost about £277,001.

Halesowen T.C. Approval given for erection of 64 houses on Howley Grange estate.

Hereford. It is proposed to erect 50 houses on Tupsley estate.

Hull. White and Farrell Ltd., printers, of 67 Beverley Rd., are seeking licence for their new premises on Reform St., Industrial estate. Also H. W. Collins and Co., St. Andrews Dock, want to lease land in Goulton St. for erection of modern fish food factory.

Leamington Spa T.C. Scheme in hand for 139 houses at Lillington. Also, C. H. Osborne, The Parade, will probably be appointed quantity surveyor for erection of flats on Brunswick South site.

Ledbury (Hereford) R.D.C. Plans approved for erection of 16 flats, 17 houses and 10 old people's dwellings at Brook Farm, Colwall.

London. A £350,000 licence has been granted to Stephenson Clarke Ltd., 4 Fenchurch Ave., E.C.3. for construction of multi-storey office block in Great Tower St. Mr. H. J. White, 407 Holloway Rd., N.7, is architect for factory proposed in White Lion St., E.C. Matthews and Sons, 91 Gower St., W.C.1, are architects for factory in Lambles St., N.W.5. Pusser and Co., 31 Westminster Place Gardens, S.W.1, are architects for new factory for Aldous and Campbell Ltd., in Bartholomew St., S.E.

March (Ely) U.D.C. Layout plans being prepared for 180 houses in Elliott and Badgeney Roads.

Newcastle-on-Tyne. British Railways are to spend £178,000 on renewals to electric railway system on Tyneside. City Council is considering expenditure of £50,000 on provision of four electric cranes to improve cargo handling facilities on Newcastle Quay.

North Riding Following schools have been included in 1954 programme: Northallerton primary, Eastfield Scarborough modern, and Eastfield primary.

Sheffield T.C. Site works to start soon in first stage of erection of Colleges of Technology and Commerce in Pond St. City Architect is J. L. Wolmesley, Town Hall. Also United Sheffield Hospitals Board is planning new teaching hospital in Glossop Rd.

Sittingbourne and Milton (Kent) R.D.C. Erection of 120 houses on North Court estate. Engineer and Surveyor's Office, High St., Sittingbourne.

Solihull (War). Plans approved for erection of Tudor Grange grammar school. Cost estimated at £184,245.

Stafford. Orthopaedic and pathological department is to be provided at Staffordshire General Infirmary at estimated cost of £80,000.

Stepney B.C. Scheme in hand for erection of 16 shops, 10 flats, and 16 maisonettes in 4-storey block, and two 5-storey blocks of 12 flats, 60 maisonettes, etc., in Duckett St.

Thornaby-on-Tees. Work expected to begin soon on construction of motive power depot for British Railways.

Torquay. Plans submitted for factory in Coombe Rd. for Newlyn Knitting Co. Ltd..

Washington (Dur). Additional storey to be built at offices of Joseph Cook (1930) Ltd., Washington Steelworks.

MEETINGS TO NOTE

MONDAY, JUNE 8

BRIT. ELECTRICAL POWER CONVENTION and Exhibition opens at Torquay, continuing until Friday.

TUESDAY, JUNE 9

INCORP. PLANT ENGRS. (Manchester).—"Combustion Heat and Power," C.F. Roberts, Engrs.' Club, Albert Sq., 7.15 p.m.

INCORP. PLANT ENGRS. (London).—"Thermal Insulation of Plant and Buildings," C. G. Bower. Royal Soc. of Arts, W.C.2, 7 p.m.

THURSDAY, JUNE 11

INCORP. PLANT ENGRS. (Newcastle-on-Tyne).—"Plant Engineer and the Factories Act," A. Hewitt. Roadway House, Oxford St., 7.30 p.m.

FRIDAY, JUNE 12

S. WALES INST. OF ENGRS.—Engineers' Coronation dinner and dance at Assembly Room, City Hall, Cardiff, 7 p.m.

EXHIBITION DIARY

Bath and West Agric. Show being held between June 3 and 6.

British Plastics. Opened at Olympia on June 3, continuing until June 13.

Three Counties Agric. Show will take place on The Racecourse, Hereford, between June 9 and 11.

BRITISH INSULATED CALLENDER'S CABLES

Turnover of £85,000,000

THE 8th annual general meeting of British Insulated Callender's Cables, Ltd., will be held on June 18 in London.

The following is an extract from the circulated statement of the chairman, Sir Alexander Roger, K.C.I.E.:

During 1952 the parent Company enjoyed the benefits of a full order book, enabling us as materials became more freely available to plan production on the most efficient basis and to achieve record figures both in the volume and value of our turnover. Profit on trading increased by £1,435,183.

Of this improvement, after allowing for decrease in receipts from investments, 63% is absorbed by taxation, the total requirements of which amount to the enormous figure of £3,368,492.

Out of the profit left available after taxation, we propose to transfer £500,000 to Contingencies Reserve and £1,000,000 to Reserve for Replacement of Fixed Assets; to bring the total distribution on the Ordinary Capital for 1952 up to 10%, less income tax; and to add the £178,030 left unappropriated to the Balance carried forward.

Since the end of the war up to 31 December, 1952, the B.I.C.C. Group have had to provide some £23,000,000 in their accounts for taxation. Favourable trading conditions, a conservative dividend policy, and, I think we can claim, good management and personnel have enabled us, in spite of taxation, to build up reserves.

The Outlook

Some months ago there was a noticeable change from a sellers' to a buyers' market and competition, especially in overseas markets, is now particularly keen. This, with the general shortage of finance, very marked in certain overseas countries, and almost everywhere a varying lack of confidence in the immediate future, has resulted in a substantial falling off in the rate of intake of new orders.

The achievement of stability and the general return of confidence may take time, and conditions during 1953 are not likely to be as good as in the record year of 1952, which, in retrospect, was undoubtedly a year of very favourable trading. But over any reasonable period the demand for our products must continue. We have a wide base both in the variety of our products and in the world-wide spread of our activities. We are constantly improving the efficiency of our plant and machinery.

AUTOMATIC TELEPHONE & ELECTRIC COMPANY

Higher Sales Offset by Rising Costs

THE annual general meeting of the Automatic Telephone and Electric Company Ltd., will be held on June 19 in London.

The following is an extract from the statement circulated by the chairman, Sir Alexander Roger, K.C.I.E.:

The profit of the parent company at £850,570 shows a reduction of £321,411 compared with 1951. Although the volume of our sales and production was even higher than 1951 the profit on our trading operations was reduced by rising costs and more intensive competition abroad. On the whole we consider that the trading results of the year are satisfactory.

Dividends at the same rate as last year are proposed. The consolidated profit of the Group amounts to £1,137,917 against £1,545,399. Consolidated reserves total £4,776,036.

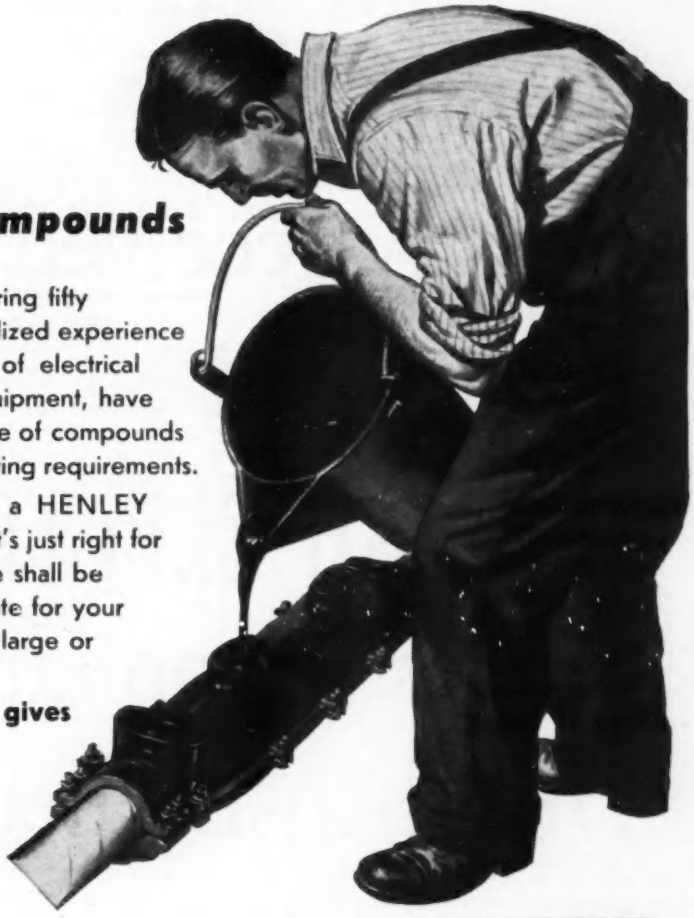
Production and Sales

It may be noted that in spite of the considerable sums of fresh capital which we have raised in the post-war years and the substantial surplus earnings which we have reinvested in the business, it is still necessary to resort to temporary borrowing. Rising costs, excessive taxation, and long-term credit to overseas customers are largely responsible for this situation, which may be further aggravated by the recent relaxation of export credit restrictions. It is all very well for the Government to agree that it is in the interests of the country that extended credit trems may be granted to such and such a buyer, but it still leaves industry with the problem of finding the cash to tide itself over the period of manufacture and credit.

During the past year production was maintained at a high level. Due to the continued Government restrictions on the Post Office's capital investment programme, supplies of Telephone Switching Equipment to this customer were again severely limited, and consequently the emphasis has continued to be on export business. I must confess that although the world-wide demand for better telecommunication facilities will not be satisfied in the foreseeable future, the prospect of the British manufacturer in this field is fraught with difficulties.

It is, however, a truism to state that sound export business must be based on satisfactory home business. The Post Office are as anxious as we are to see the telephone service expanded and improved, but the Government policy of restriction on their capital expenditure is disastrous. From the Government point of view this is unwise anyhow in the case of an investment which is revenue-earning, but from the public point of view it is also a serious brake on industrial expansion.

After dealing with the progress of the subsidiary companies, the statement continues: We have a good order book; the demand for more and improved telecommunication equipment is likely to exist for a long time, but increasing intense competition from foreign manufacturers in the export field will call for greater effort and reduced costs on the part of Industry in this country.



Use the right compounds

HENLEY'S, during fifty years of specialized experience in the design of electrical distribution equipment, have evolved a range of compounds to meet all jointing requirements. There's always a HENLEY Compound that's just right for the job and we shall be pleased to quote for your requirements—large or small.

Catalogue 57 gives full details.

B.E.P. Convention
Henley Stand
No. 10

***Use* HENLEY**

INSULATING COMPOUNDS

for Electrical Distribution Equipment

W. T. HENLEY'S TELEGRAPH WORKS CO. LTD., 51-53 HATTON GARDEN, LONDON, E.C.1

If you haven't already received details of the

'ENGLISH ELECTRIC'

domestic appliances Direct-to-Dealer Plan write to:

The ENGLISH ELECTRIC Company Limited
Domestic Appliance Division, East Lancashire Road, Liverpool 10
Telephone: Aintree 3641

See the English Electric advertisement for Fusegear which appears on page 43 of this issue

CLASSIFIED ADVERTISEMENTS

OFFICIAL TENDERS AND APPOINTMENTS

WORK WANTED WANTED · FOR SALE

Those wishing to advertise in these pages should send the text to the Classified Advertisement Dept., Electrical Times, Sardinia House, Sardinia Street, London W.C.2, before 10 a.m. on TUESDAY of week of issue. Official Displayed Advertisements are charged at 42s. per inch, and all other classified advertisements at 3s. per line. Situations Wanted will be published four times for twice the single insertion rate. Fee for Box No. and postage on replies is 2s.

TENDERS INVITED

CITY OF MANCHESTER

THE TRANSPORT COMMITTEE invite tenders for ELECTRICAL INSTALLATION (Phase 2) required at Queens Road Bus Garage, Manchester. Specification and drawings may be obtained from the City Architect, Town Hall. Deposit £1 1s. (returnable.) Tenders, sealed in endorsed envelopes, must be delivered before 10 a.m., June 29, 1953.

PHILIP B. DINGLE,
Town Clerk.

May, 1953. (E 55)

APPOINTMENTS VACANT

Engagement of persons must be made through a Local Labour Office or Scheduled Employment Agency, if the applicant is a man aged 18-64, or a woman aged 18-59; unless the person concerned is excepted or the employment is in a managerial or professional capacity, or is otherwise excepted from the provisions of the Notification of Vacancies Order, 1952.

BRITISH ELECTRICITY AUTHORITY

Eastern Division

APPLICATIONS are invited for the following post:—

JUNIOR ENGINEER
Luton Generating Station

Salary, Class "E," Grade 15, £390, to Grade 14, £445 p.a. Depending on qualifications, etc.

Duties include operation of a.c. and d.c. plant on shift, and technical assistance on boilers and turbines, and provides experience useful for subsequent promotion.

Applicants should have had training or experience in similar work. Technical training to Ordinary National Certificate standard, or equivalent, and experience or knowledge of rotary converting plant will be an advantage.

Applications, stating age, qualifications and experience, to the Divisional Controller, British Electricity Authority, Eastern Division, Northmet House, Southgate, N.14, by June 13, 1953.

W. N. C. CLINCH,
Controller.
(E 65)

MIDLANDS ELECTRICITY BOARD

APPLICATIONS are invited for the following superannuable posts in the Central Gloucestershire Sub-Area:—

DISTRICT ENGINEER, DEAN FOREST DISTRICT. Extensive experience necessary in the operation and maintenance of high and low voltage distribution networks and associated switchgear, transformers and protective systems. Technical qualifications desirable. Salary £813/£843 per annum (N.J.B. Class "D," Grade 3).

THIRD ASSISTANT ENGINEER, Sub-Area Headquarters. Experience necessary in installation and maintenance of protective gear, sub-station maintenance and fault current calculations. Technical qualifications desirable. Salary £608/£630 per annum (N.J.B. Class "G," Grade 10).

Apply within 14 days, stating age, experience, salary and position to D. Holt, Manager, Central Gloucestershire Sub-Area, Midlands Electricity Board, 126, London Road, Gloucester.

A. STEPHENS,
Secretary.
(E 54)

SOUTH WEST SCOTLAND ELECTRICITY BOARD

THE SOUTH WEST SCOTLAND ELECTRICITY BOARD invite applications for appointment as TECHNICAL ENGINEER in the Chief Engineer's Department.

Applicants should preferably possess an honours degree in electrical engineering or be Corporate Members of the Institution of Electrical Engineers. They should have experience with distribution plant and equipment at all voltages up to 33 kV, and a good practical and theoretical knowledge of metering, protective gear, telephone and supervisory equipment, with a specialist knowledge of one or more of these subjects. The salary for the appointment will be £1,325 per annum, and future salary and conditions of service will be in accordance with agreements made by the National Joint Managerial and Higher Executive Grades Committee.

The appointment is superannuable, and the successful applicant may be subject to medical examination. Forms of application may be obtained from the undersigned and should be returned not later than June 20, 1953.

J. MEEK,
Secretary.

62 Dalziel Drive,
Glasgow S.1.
May 27, 1953. (E 65)

LONDON ELECTRICITY BOARD

ENGINEERING DRAUGHTSMAN

APPLICATIONS are invited for the position of Engineering Draughtsman for electrical plant layout in the Drawing Office of the Chief Engineer's Department in Central London.

Applicants should preferably have served an engineering apprenticeship or recognised training course and have had good technical training, together with experience in the layout of transforming plant, switchgear and cables for operation on voltages up to 66 kV. A knowledge of modern protective systems and diagrams would be an advantage.

The post is graded under Schedule "D" of the National Joint Board Agreement as: Grade 5, £595 7s. to £704 11s. per annum, or Grade 6, £458 to £595 7s. per annum. These figures are inclusive of London allowance, and the commencing salary will be dependent upon qualifications and experience.

Application forms from Establishments Officer, 46 New Broad Street, E.C.2, to be returned completed within 7 days of the publication of this advertisement. Please enclose addressed foolscap envelope and quote Ref. V/1580/T. on all correspondence. (E 58)

BRITISH ELECTRICITY AUTHORITY

North Eastern Division

APPLICATIONS are invited for the appointment of GENERAL ASSISTANT ENGINEER (Telecommunications) in the Technical Department with Headquarters at Darlington.

Applicants should have had experience in the installation and maintenance of automatic and voice frequency telephone equipment, and technical qualifications of Graduate I.E.E. standard are desirable.

The salary for this appointment (which is superannuable) will be in accordance with the National Joint Board Agreement, Schedule "C", Grade 8 (£501-£675 per annum) and will commence at a point commensurate with qualifications and experience.

Forms of application may be obtained from Divisional Establishments Officer, British Electricity Authority, North Eastern Division, Carliol House, Newcastle-upon-Tyne 1, to whom they should be returned to arrive not later than June 20, 1953. (E 44)

NORTH WESTERN ELECTRICITY BOARD

APPOINTMENT OF
ENGINEERING DRAUGHTSMAN (ELECTRICAL)

Sub-Area Technical Engineer's Department, Manchester

APPLICANTS should have had a suitable technical education and good Drawing office training; experience of distribution network equipment would be an advantage.

Salary scale: within the range £433 to £567 p.a. Schedule "D," Grade 6. N.J.B. conditions.

Applications to Sub-Area Secretary, No. 1 Sub-Area, The North Western Electricity Board, Town Hall, Manchester, P.O. Box No. 493, by June 13, 1953.

APPOINTMENT OF ENGINEERING DRAUGHTSMEN
(a) Mains Department, Bolton, and
(b) Kearsley District

Applicants should have served a suitable apprenticeship, and possession of the O.N.C. or H.N.C. in electrical engineering will be an advantage. Applicants should have had experience in the layout of sub-stations and the diagrams of connections of the associated switchgear transformers and protective systems.

Salary scale: £433 to £567 p.a. Schedule "D," Grade 6. N.J.B. conditions.

The successful applicant for post (a) will be required to work in Manchester for a period after appointment.

APPOINTMENT OF
SECOND ASSISTANT DISTRICT ENGINEER
Kearsley District

The successful candidate will be required to assist in the construction and maintenance of sub-stations and overhead lines, the laying and jointing of cables on high and medium voltage mains up to 11 kV, and the operation and control of switching in the district, including standby duty.

Preference will be given to applicants who are Corporate Members or Graduates of the Institution of Electrical Engineers or who hold equivalent qualifications.

Salary scale: £697 to £718 p.a. Class "F," Grade 7. N.J.B. conditions.

Applications for the above posts to Sub-Area Manager, No. 2 Sub-Area, The North Western Electricity Board, National Buildings, St. Mary's Parsonage, Manchester 3, by June 13, 1953.

APPOINTMENT OF
JUNIOR ENGINEER (TESTING ASSISTANT)
Sub-Area Testing Station, Stalybridge

Applicants should have served an electrical engineering apprenticeship and had some subsequent experience, preferably on testing. Possession of the H.N.C. will be considered an additional recommendation.

Salary scale: £390 to £545 p.a. Grade "K.19/15," N.J.B. conditions.

Applications to Sub-Area Manager, No. 3 Sub-Area, The North Western Electricity Board, Union Street, Oldham, by June 13, 1953.

APPOINTMENT OF
THIRD ASSISTANT ENGINEER (SYSTEM PLANNING)
Sub-Area Technical Department, Preston

Applicants should be experienced in planning and estimating for extensions of h.v. and m.v. networks, sub-station design and network calculations, and should possess some knowledge of protective equipment. Preference given to holders of a degree or H.N.C. in electrical engineering.

Salary scale: £719 to £750 p.a. Grade "K.10." N.J.B. conditions.

Applications to Sub-Area Manager, No. 4 Sub-Area, The North Western Electricity Board, 40-41, Lune Street, Preston, by June 13, 1953.

APPOINTMENT OF
THIRD ASSISTANT ENGINEER
Sub-Area Mains Department, Castle Green, Kendal

Applicants should have had a sound technical training and be capable of the preparation of schemes and estimates for h.v. and l.v. networks and sub-stations up to 33 kV with practical experience of this work.

Qualifications leading to Corporate membership of the I.E.E. will be an advantage.

Salary scale: £680 to £706 p.a. Grade "J.10." N.J.B. conditions.

Applications to Sub-Area Manager, No. 6 Sub-Area, The North Western Electricity Board, Castle Green, Kendal, by June 13, 1953. (E 60)

BRITISH ELECTRICITY AUTHORITY

Midlands Division

DEPUTY POWER STATION SUPERINTENDENT is required at Walsall Generating Station. N.J.B. service conditions, superannuable appointment, salary within Schedule "A," Grade "G3," commencing at £971 per annum.

Applicants should preferably possess a university degree in engineering or be corporate members of the Institution of Electrical and/or Mechanical Engineers. A wide knowledge of the operation and maintenance of a large generating station and sound administrative ability are essential.

Apply on forms available from the Establishments Officer, 53 Wake Green Road, Moseley, Birmingham 13, by June 20, 1953. (E 62)

CITY OF SALISBURY

Southern Rhodesia

APPLICATIONS are invited for the following fixed establishment posts in the Electricity Department of the above Municipality:—

(a) GENERATION ENGINEER (salary scale £1,400 x 50—£1,700 p.a.). Applicants must have had extensive experience in the operation and control of large steam generating plants, preferably including experience with pulverised fuel fired boilers, and must be fully qualified mechanical and electrical engineers.

(b) POWER STATION SHIFTSMAN (salary scale £1,000 x 40—£1,280 p.a.). Applicants must have completed a technical education to the standard of Graduate of the Institution of Electrical Engineers or the Institution of Mechanical Engineers, and must have had experience in the operation of steam power station plant, including control room duties (preferably on an inter-connected system), and the running-up of steam turbine plant.

The above appointments are subject to Council's Service and Leave Regulations, which will be made available for inspection by selected candidates at the offices of the undersigned. The salaries payable will commence at the minimum of the above grades, rising by annual increments to the maximum salary of the grade (no cost of living or other allowances are payable).

The successful candidates must be able to comply with the regulations of the Southern Rhodesia Immigration Authorities, and will be required to submit a satisfactory medical certificate.

Applicants, who should be not more than 45 years of age, are requested to submit full particulars of their qualifications, training and experience, giving details of positions held and salaries received, marital state, age, place of birth and nationality. Copies of not more than three recent testimonials may be included.

Canvassing, directly or indirectly, will be a disqualification.

Applications, suitably endorsed on the cover, must reach the office of the undersigned or or before Saturday, June 27, 1953. Airmail paper should be used.

DAVIS & SOPER, LTD.,
Agents to the City Council of Salisbury,
52 and 54, St. Mary Axe,
London E.C.3.
May 18, 1953. (E 43)

YORKSHIRE ELECTRICITY BOARD

APPLICATIONS are invited for the following appointment:—

No. 2 (Huddersfield) Sub-Area

Halifax District
SECOND ASSISTANT DISTRICT ENGINEER

Applicants should be Corporate Members of the Institution of Electrical Engineers or hold equivalent qualifications. They must have had a sound practical training and extensive experience in the design, construction, operation and maintenance of h.v. and l.v. overhead and underground distribution systems, substation plant and ancillary equipment preferably in a large undertaking.

Salary: N.J.B. Class "G," Grade 7, £729 to £758 per annum.

Applications, giving full details of age, qualifications and experience should be forwarded to the Manager, No. 2 (Huddersfield) Sub-Area, Yorkshire Electricity Board, Market Street, Huddersfield, not later than June 18, 1953. (E 61)

BRITISH ELECTRICITY AUTHORITY

North Western Division

VACANCY No. 122/53. SHIFT CHARGE ENGINEERS at the new Chadderton h.p. generating station, near Oldham. Salary £729-£758 (G. 7).

Vacancy No. 123/53. OPERATION AND EFFICIENCY ENGINEER at Stuart Street Generating Station, Manchester. Salary £833-£866 (H. 6).

VACANCY No. 126/53. STATION SHIFT CONTROL ENGINEER at Radcliffe Generating Station, near Manchester. Salary £577-£598 (F. 10).

Apply to Establishments Officer, British Electricity House, 825 Wilmslow Road, Manchester 20, before June 13. (E 56)

BRITISH ELECTRICITY AUTHORITY

Midlands Division

SHIFT CHARGE ENGINEER is required at Nechells "B" Power Station, Birmingham. N.J.B. service conditions, superannuable appointment, salary within Schedule "A" Grade J7, commencing at £817 per annum.

Higher National Certificate in electrical and/or mechanical engineering required, together with sound experience in the operation and maintenance of large high pressure, and high temperature boilers and turbines; also e.h.t. switchgear.

Application forms available from the Establishments Officer, 53 Wake Green Road, Moseley, Birmingham 13, to be returned by June 20, 1953. (E 45)

BRITISH ELECTRICITY AUTHORITY

East Midlands Division

APPLICATIONS are invited for the following positions within the Division:

CIVIL ENGINEERING DRAUGHTSMEN
Construction Department Vacancy No. 22/53

Candidates should have experience in design and detail of reinforced concrete structures, piled and slab foundations for heavy plant, culverts, cable subways, for general building construction drainage and sanitation schemes, associated with offices and administrative buildings.

The salary will be in accordance with Grade 5 (£567-£671 per annum) or Grade 6 (£433-£567 per annum) of Schedule "D" of the National Joint Board Agreement.

DRAUGHTSMAN
Transmission Department, Divisional Headquarters, Nottingham Vacancy No. 42/53

Candidates should preferably have had experience in one or more of the following: Design and construction of high voltage sub-stations or overhead transmission lines and underground cable systems. Civil engineering, electrical engineering, including layouts and diagrams for h.v. transformers and switchgear.

Salary and conditions of service will be in accordance with the National Joint Board Agreement, Grade 6 of Schedule "D" (£433-£567 per annum) according to qualifications and experience.

ENGINEERING DRAUGHTSMEN (MECHANICAL)
Construction Department Vacancy No. 44/53

Senior Draughtsmen are required in the mechanical section of the Construction Department. Candidates should have experience in one or more of the following:

(i) Design and layout of power station equipment, including turbo-alternators, boiler plant, coal and ash plant, and general station auxiliaries.
(ii) H.P. and l.p. steam and feed pipework. Condensing plant and feed heating systems.
(iii) Convevor plant, coal handling systems and material handling of station auxiliary equipment.

Salary and conditions of service will be in accordance with the National Joint Board Agreement, Grade 5 (£567-£671 per annum) and Grade 6 (£433-£567 per annum) of Schedule "D" according to experience.

ENGINEERING DRAUGHTSMEN (ELECTRICAL)
Construction Department Vacancy No. 61/53

Candidates should have experience in the preparation of layouts and diagrams for the installation of e.h.t. and l.t. switchgear, transformers, e.h.t. and l.t. cables; knowledge of protective gear systems would be an advantage.

The salary will be in accordance with Grade 5 (£567-£671 per annum) or Grade 6 (£433-£567 per annum) of Schedule "D" of the National Joint Board Agreement.

The closing date for this appointment will be June 8, 1953.

The above appointments will be pensionable within the provisions of the British Electricity Authority and Area Boards Superannuation Scheme.

Applications should be submitted on the official form which may be obtained from the Divisional Establishments Officer, British Electricity Authority, Barker Gate, Nottingham, and should be returned to the undersigned by the dates stated. Please quote Vacancy Number.

L. F. JEFFREY,
Divisional Controller.
(E 57)

SOUTH WEST SCOTLAND ELECTRICITY BOARD

THE SOUTH WEST SCOTLAND ELECTRICITY BOARD invite applications for appointment of DISTRICT COMMERCIAL ENGINEER in the Eastern District of the Glasgow Sub-Area and the joint Paisley/Johnstone District of the Clyde Sub-Area of the Board.

The posts are on Grade 3, Class "F," of the National Joint Board Agreement, salary scale £912 to £951 per annum.

Applicants should be Corporate Members of the Institution of Electrical Engineers or possess an equivalent qualification in electrical engineering, and preferably have experience in the utilisation of electrical energy in industry, commercial and domestic premises, a knowledge of installation work, and be conversant with tariffs, sales and all aspects of service to consumers. The appointments are superannuable and the successful applicants may be subject to medical examination.

Forms of application, which may be obtained from the undersigned, should be completed and returned not later than June 20, 1953.

Persons who recently submitted a form of application for similar appointments need only indicate that they wish to be considered for these vacancies.

J. MEEK,
Secretary.

62 Dalziel Drive,
Glasgow S.1.
May 29, 1953. (E 64)

CITY OF SALISBURY

Southern Rhodesia

VACANCY FOR ELECTRICAL ENGINEER, GRADE 2

APPLICATIONS are invited for the post of Electrical Engineer, Grade 2, on the salary scale £930 by £60 to £1,290.

Candidates should possess a degree in electrical engineering or the equivalent, and/or be corporate members of the British Institution of Electrical Engineers, and have had at least three years' experience with a supply undertaking in the laying, jointing of mains, erection of overhead lines and substations up to 33,000 V, and be capable of designing, controlling and maintaining a distribution network.

The appointment will be subject to the Council's Service and Leave Regulations, which will be made available for inspection at the offices of the undersigned. The salary payable will commence at the minimum of the above scale, and rise by annual increments to the maximum; no cost of living or other allowances are payable.

The successful candidate must be able to comply with the regulations of the Southern Rhodesia Immigration Authorities, and will be required to submit a satisfactory medical certificate of fitness.

Applicants are requested to submit full particulars of their qualifications, training and experience, giving details of positions held and salaries received, marital state, age, place of birth, and nationality. Copies of no more than three recent testimonials may be included.

Canvassing, directly or indirectly, will be a disqualification.

Applications, suitably endorsed on the cover, must reach the offices of the undersigned on or before Saturday, June 20, 1953. Airmail paper should be used.

DAVIS & SOPER LTD.,
Agents to the City Council of Salisbury.
52 and 54 St. Mary Axe,
London E.C.3.
May 20, 1953. (E 35)

MIDLANDS ELECTRICITY BOARD

APPLICATIONS are invited for the following superannuable posts:—

DISTRICT COMMERCIAL ENGINEER
Stafford

Extensive experience necessary of industrial and domestic load development in rural and urban areas, the organisation of service centre and sales publicity, the operation of tariffs, and of electrical contracting work. Technical qualifications desirable. Salary £803 to £834 per annum (N.J.B., Class "E," Grade 4).

Apply within 14 days stating age, qualifications, etc., to Sub-Area Manager, North Staffs Sub-Area, Midlands Electricity Board, 31 Kingsway, Stoke-on-Trent.

FIRST ASSISTANT DISTRICT COMMERCIAL ENGINEER
Worcester

Candidates should have comprehensive experience in all branches of commercial work, including preparation of specifications and the completion of tenders for large wiring contracts, and in addition should be competent to deal with consumers' inquiries relating to all industrial applications. Technical qualifications desirable. Salary £699 to £725 per annum (N.J.B., Class "E," Grade 6). (The classification for 1953-54 is based on unit sales of approximately 96 million units.)

Apply within 14 days stating age, qualifications, etc., to Sub-Area Manager, Worcester and District Sub-Area, Midlands Electricity Board, Whittington, Worcester.

A. STEPHENS,
Secretary.
(E 77)

BRITISH ELECTRICITY AUTHORITY

Merseyside and North Wales Division

THE appointment of DEPUTY STATION SUPERINTENDENT will shortly be made at the Bold Power Station (near St. Helens) and Connah's Quay Power Station, Flintshire. These stations are under construction and applications are invited from qualified engineers having the requisite knowledge and experience. Salary £971 to £1,014 p.a. N.J.B., Class "G," Grade 3 (based on a capacity of 120 MW). It is anticipated that the Connah's Quay Power Station will reach its ultimate capacity of 180 MW within five years.

Applicants should preferably possess a university degree or its equivalent and be a corporate member of one or more of the recognised engineering institutions.

Application forms are obtainable from the Divisional Secretary, Beaconsfield Road, Woolton, Liverpool. Closing date June 26, 1953. (E 78)

BOX No. replies to be addressed to the ELECTRICAL TIMES, Sardinia House, Sardinia Street, London W.C.2

Engagement of persons must be made through a Local Labour Office or Scheduled Employment Agency, if the applicant is a man aged 18-64, or a woman aged 18-59; unless the person concerned is excepted or the employment is in a managerial or professional capacity, or is otherwise excepted from the provisions of the Notification of Vacancies Order, 1952.

AGENT required by manufacturer of solid type boiling plates for Wales. Electricity Board and trade connections essential. Generous commission terms. Write with full particulars.—Box No. 2685, Electrical Times. (E 48)

AN EXPERIENCED D.C. DESIGNER, capable of using his initiative required for interesting work on dynamo electric machines from 5 to 5,000 h.p./kW. A superannuation scheme in operation and the usual social amenities available in an organisation of progressive outlook.—All applications will be treated with the strictest confidence and should be addressed to the General Manager, Lancashire Dynamo & Crypto Ltd., Trafford Park, Manchester 17. (E 68)

BRITISH ELECTRICITY AUTHORITY, Merseyside and North Wales Division, require an ASSISTANT ENGINEER (OPERATION) at the Percival Lane Power Station, Runcorn, Cheshire. Salary, £496-£514, N.J.B. Schedule A, Class "G," Grade 13. Superannuable.

Experience in a control room of a modern power station and Higher National Certificate or equivalent qualification is desirable.

Application forms may be obtained from the Divisional Secretary, Beaconsfield Road, Woolton, Liverpool. Closing date, June 16, 1953. (E 66)

BRITISH ELECTRICITY AUTHORITY, Merseyside and North Wales Division, require suitably qualified ENGINEERS for control room duties at (a) St. Helens Power Station, salary £555-£569, N.J.B., Class "E," Grade 10, and (b) Wallasey Power Station, salary £531-£547, N.J.B., Class "D," Grade 10. These salaries are provisional, superannuable and subject to medical examination. Applicants should have experience in the control room of a modern generating station. The possession of qualifications would be an advantage.—Application forms may be obtained from the Divisional Secretary, Beaconsfield Road, Woolton, Liverpool. Closing date, June 9, 1953. (E 67)

CENTRAL LONDON Drawing Office of English Electric has vacancies for MECHANICAL DRAUGHTSMEN to be engaged on high voltage switchgear. Good workshop and D.O. experience essential, as the positions carry responsibility for detail design for most efficient production. Excellent canteen facilities available.—Write, quoting Ref. 112L, to C.P.S. Dept., Marconi House, Strand, W.C.2. (E 30)

DRAUGHTSMEN required for low-tension small switch and fuse gear.—Write, giving age, details of experience and salary expected, to the Personnel Officer, W. T. Henley's Telegraph Works, Co., Ltd., Gravesend, Kent. (E 27)

DESIGN DRAUGHTSMAN required by old-established manufacturing electrical engineers for development work on Induction Heating. Specialised experience not essential. Good opportunity and remuneration for suitable young man.—Write, giving details of experience, to Mr. A. D. Gilbert, Beanwy Electric Ltd. (formerly Berkeley and Young, Ltd.), Tyseley, Birmingham. (E 46)

DRAUGHTSMEN. British Insulated Callender's Cables, Ltd., have vacancies for draughtsmen in their Mechanical Engineering Division at Prescot, for design and detail work. Candidates should have mechanical experience and training to a minimum of O.N.C. standard, and some electrical knowledge would be an advantage. Permanent status after usual probationary service, with superannuation and bonus schemes. Remuneration will be assessed according to age, experience and qualifications.—Applications, in writing, should be addressed to: The Staff Officer, B.I.C.C. Ltd., Prescot, Lancs. (E 70)

ELECTRIC cable manufacturers invite applications for position of SALES MANAGER.—Apply, Box No. 2691, Electrical Times. (E 76)

GUIDED WEAPONS

ELECTRICAL Engineer, or Mathematician with relevant postgraduate experience, required for theoretical work on design of automatic control systems. Some knowledge of effect of noise on servo mechanisms an advantage. Senior staff appointment with good salary and prospects. Pension scheme.—Write in detail to:

Personnel Manager,

De Havilland Propellers, Ltd., Hatfield, Herts.

(E 31p)

ELECTRICAL ENGINEERING DRAUGHTSMAN required by Tees-side firm of engineers for the power and lighting installations of their various contracts. The work will include the preparation of control schemes, and wiring diagrams and contract requisitioning of equipment.—Apply, stating age, experience and qualifications, to Box No. 2683, Electrical Times. (E 47)

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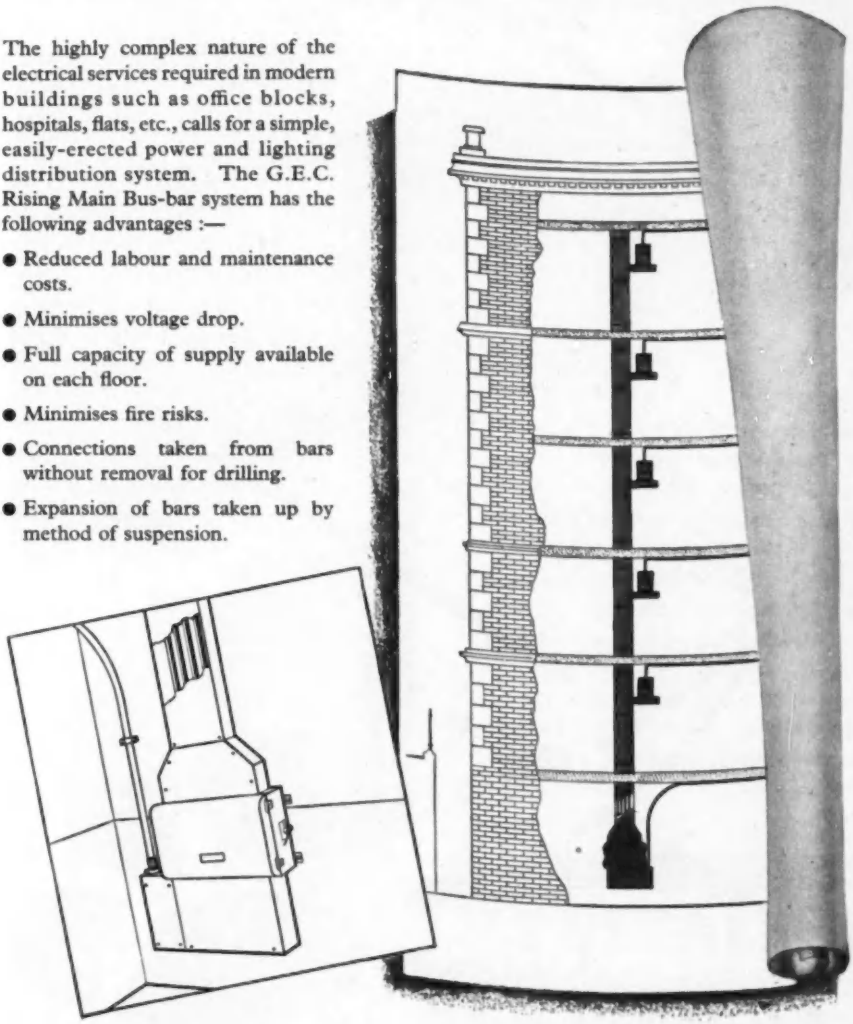

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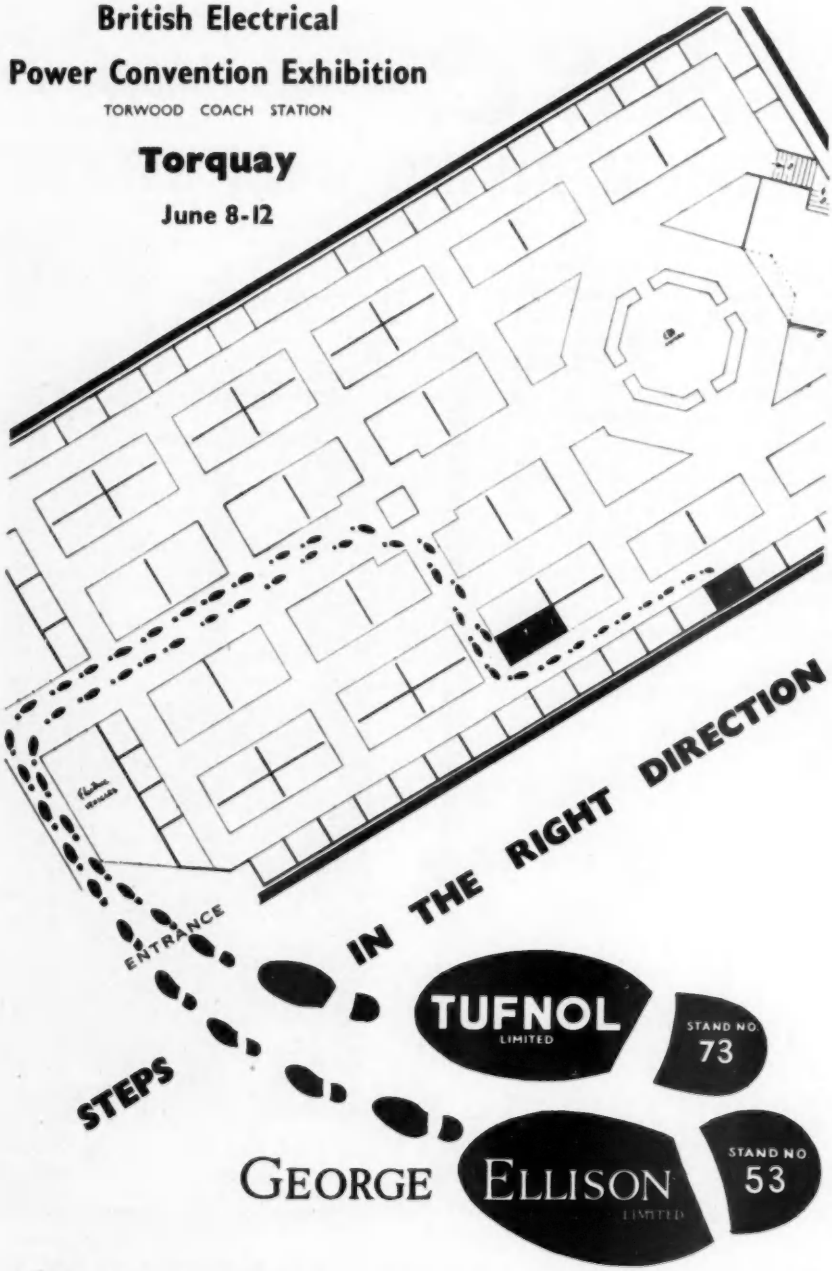

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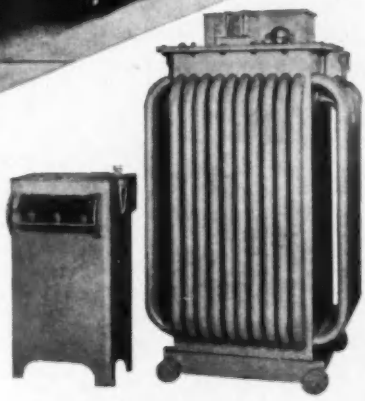

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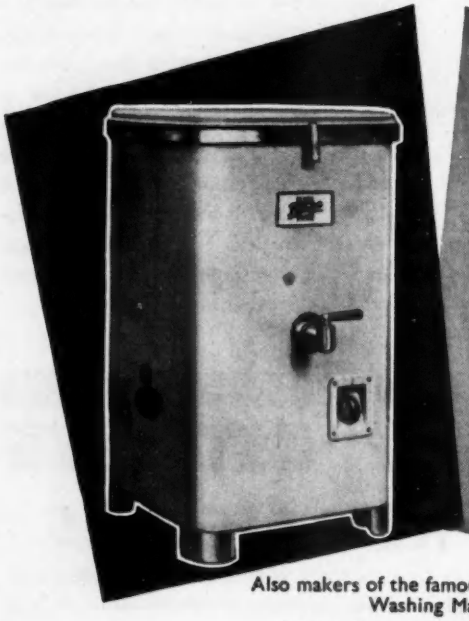

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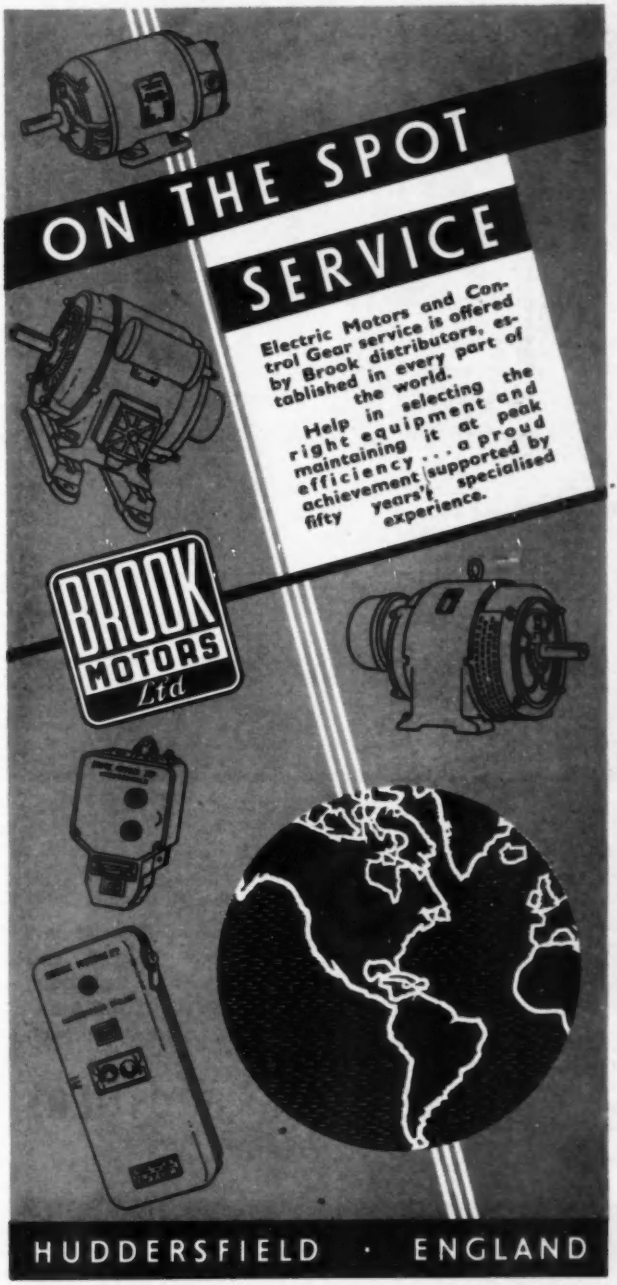
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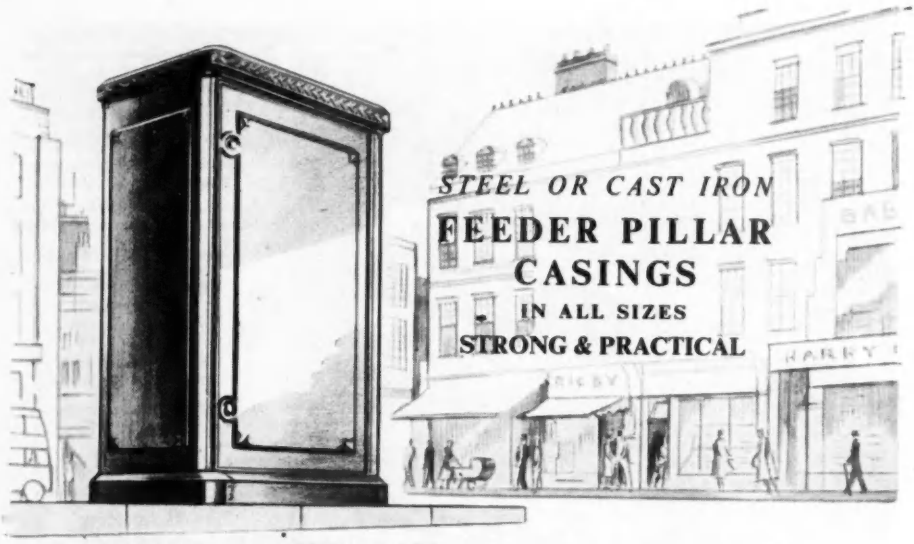

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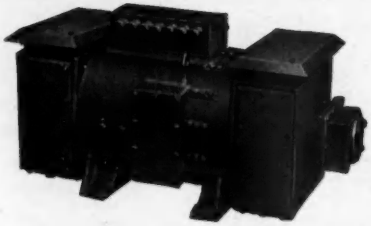

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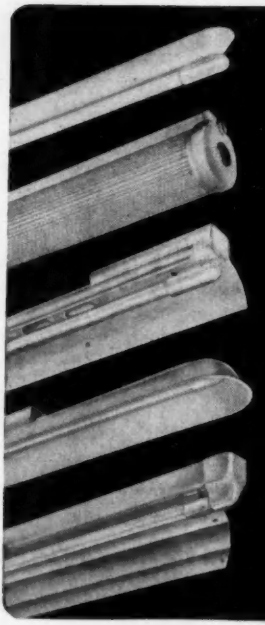

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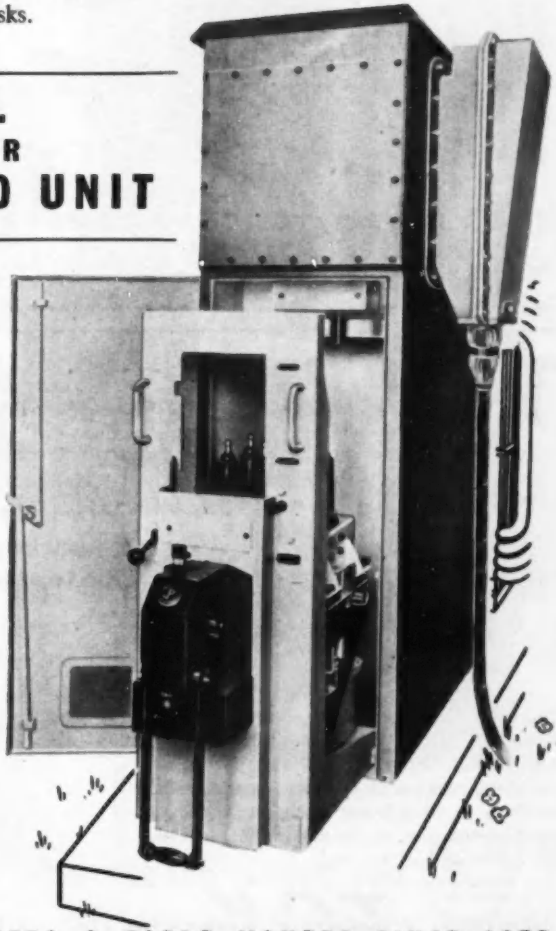

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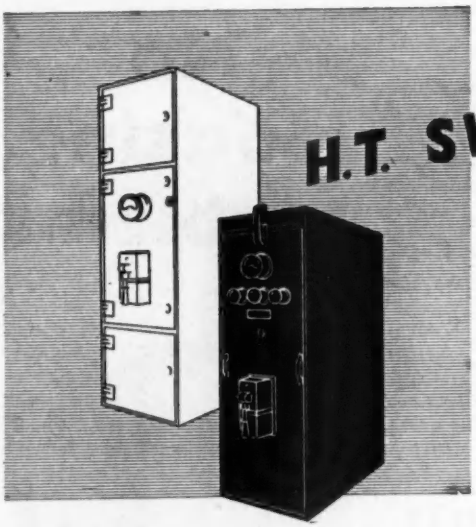

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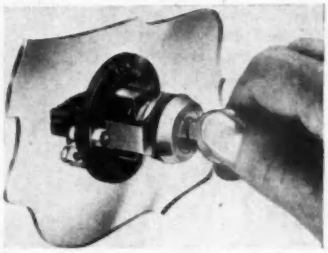

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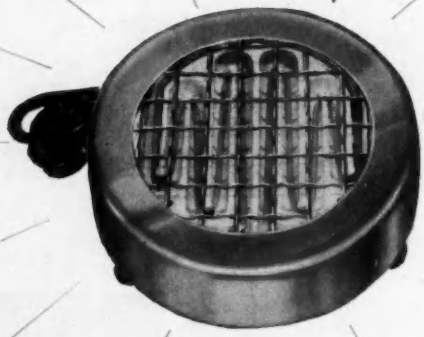

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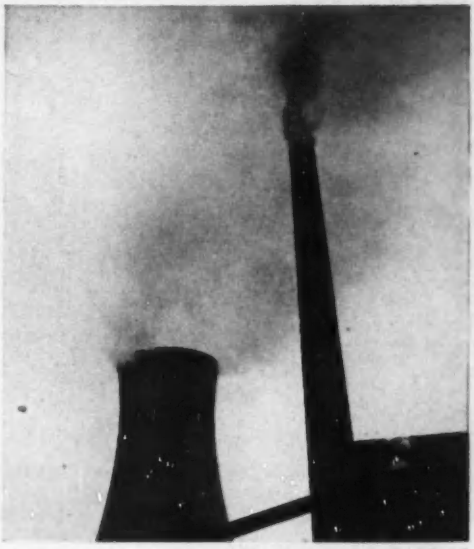

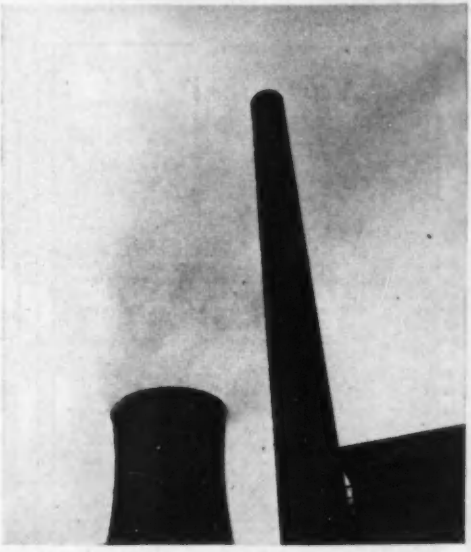

(above)
Huncoat Chimney: precipitators off

(below)
Huncoat Chimney: precipitators on

Flue dust precipitation by Simon-Carves Ltd

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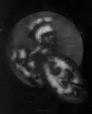

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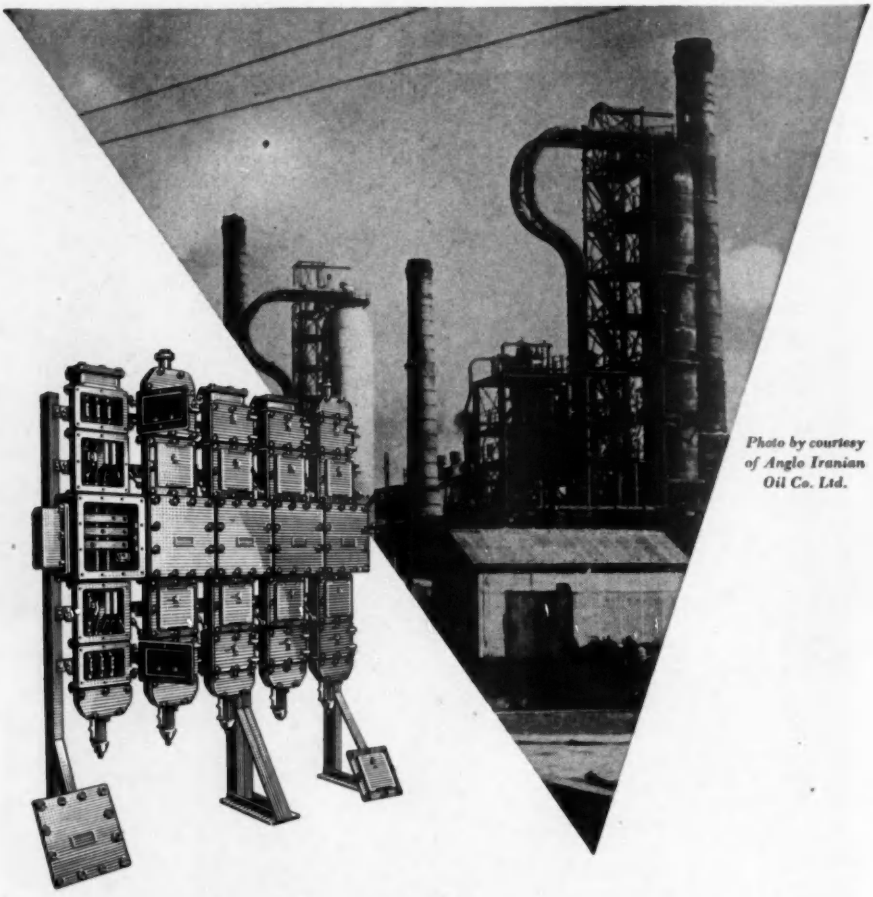

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A Contemporary

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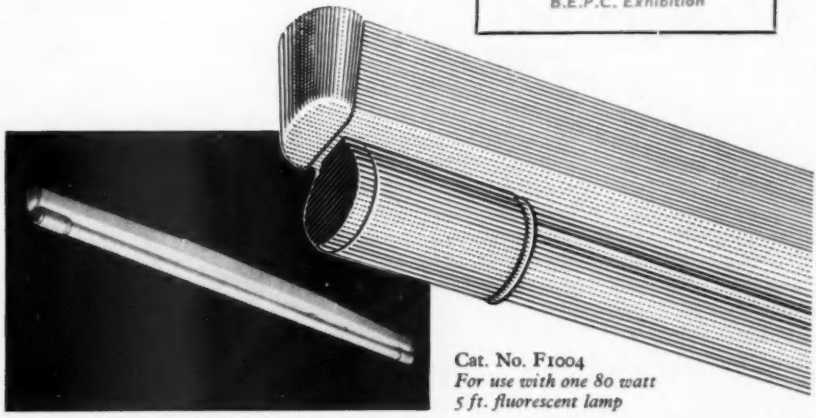

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